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PUBLISHED MONTHLY ... BOSTON, MASS

THE AMERICAN ANNUAL OF PHOTOGRAPHY

1927

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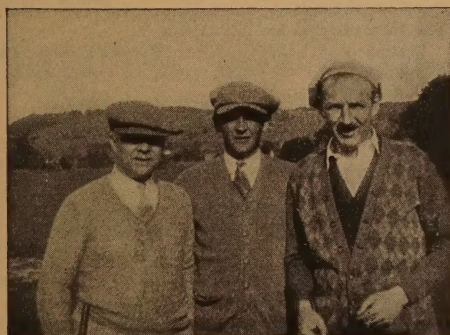
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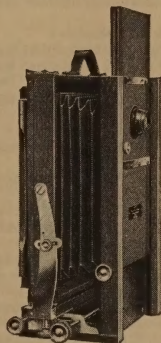
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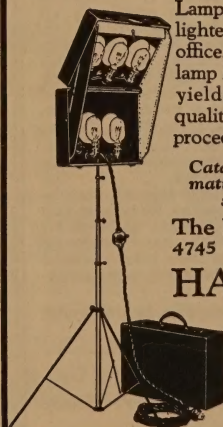
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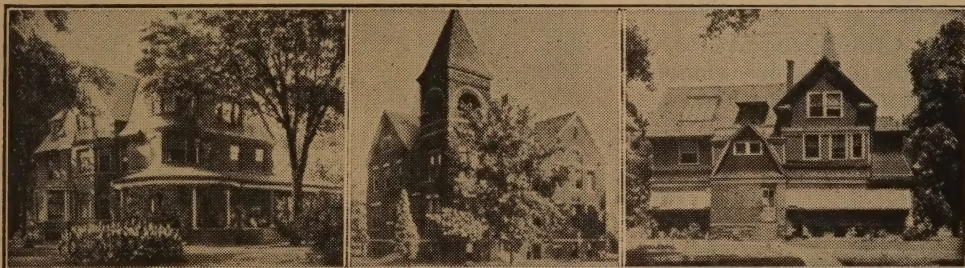


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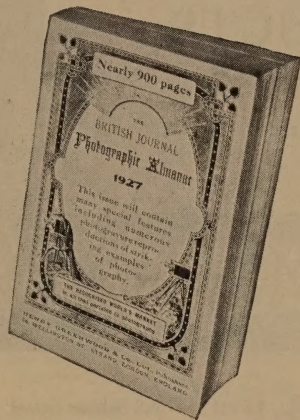
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AMERICAN PHOTOGRAPHY

Vol. XXI

BOSTON, MASS., FEBRUARY, 1927

No. 2

MACSYMON'S COMMENTARIES

A SERIES ON THE WORLD'S GREATEST PHOTOGRAPHERS

No. 3 — JOSE ORTIZ ECHAGUE, SPAIN



THE position that Spain occupied among civilized nations during the days when man began to march in voyages of invention and discovery, is a testimony to the forces of intellect and execution that characterized the Spanish race. In Spain things are taken easily, because the climate is made for "sweet ease." And because of long prosperity, because of great traditions, the race is proud and much of the Spanish genius lies fallow. But the genius is there. Achievements of the past were due to imaginative genius more even than to other essential qualities. Every now and again Spain produces a master man of rare imagination in the arts, who makes an impression on the world's outlook. Cervantes is immortal. Velasquez taught the artistic world to depict as it saw, not as it imagined it knew.

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LAGARTERANAS EN MISA

This picture of women of the wine-press at mass is of exceeding beauty and power. That will be self-evident, if the long range of tones reproduce in true scale, for the heavy passages of liquid shadow and the subtle half tones are required in proper relationship to reveal the light on the faces, glowing light on lovely Spanish faces that seem to reflect the sacred meaning of the subject.

The two faces are the picture. The hands are next in importance. Little else matters except as support. The richly flowing garments are in keeping. They are those of Spain, before modern habiliments, as well as modern architecture, contrived to merge the characteristics of races. Imagine these women with cropped hair and pink legs! Bathos! The picture would be a mockery. The woman in the rear takes her humble station. She tells of life, of its anxiety, and hardships, of its disillusion. She takes her devotions with the greater fervor and is comforted. Constructively all these things count. They have intellectual as well as aesthetic import. Everything is required. Things not relevant or disturbing were removed as far as possible before the exposure was made. Further simplification was contrived on the negative and during or after inking the print. But little if any work was done after, because Mr. Echague does not allow obvious man-handling to mar his works. For, unlike many workers, he understands how painfully a mixture of methods affects cultured minds and how it destroys the emotion even to the average onlooker.

Here is a picture where one might say that there are two principal objects. That is not impossible. Their proximity makes it the more feasible, but, if either, the younger woman is the dominant note. She is leaning to whisper, thus active, whilst the other passively listens. The younger face also is seen in more direct lighting, is between a dark shadow and a black mantilla, her eye is the more clearly seen, and the little accents of neck and ornaments serve to give further importance, as well as the more interesting folds of her shawl. Observe next the hands. How different they are. Again the younger woman scores. Her hand and arm are strongly presented and "pull" more than the folded hands of the elder woman. There is a further fine point of artistry in the arm that will escape many critics. Echague knows well that to present an arm beautifully the wrist should be turned. That has an effect of grace, for it presents a rounded narrow aspect, and thus loses itself in the forearm in fine curves. But here the purpose was to render working women and vigor rather than refinement, so the broad side of the wrist was shown deliberately and with rare judgment. Moreover, the picture has little in the way of straight line, so that the relief it affords in that direction is the more welcome. Without its help, there might be a suspicion of floppiness, which, in the complete work, is a thing of which it could not be accused. The line formed by the wrist and hand also connect the figures, the line itself being strengthened and continued by the division of the other woman's dress and turned upward by way of her cuff. The light sleeve at the left helps to balance the strong pull to the right of the figures. It further contributes a sense of atmosphere, making the third figure, the old dame at the back, retire in proper perspective. She is commendably quiet of tone and seen only as an impression. Forming the principal lateral balance for the leaning principals, she contributes a still more useful function in providing perspective balance, that is: a balance of depth. This sense of the enveloping atmosphere, the mysteries that linger in its depths, contributes much of the emotion of the work. The constructional scheme resolves itself mainly into the old tried arrange-



LAGARTERANAS EN MISA
J. ORTIZ ECHAGUE



TALLER DE COSTURA

J. ORTIZ ECHAGUE

ment of a large near object, the two women, balanced by a small far away one, the old woman, on the other side. This is all in the upper half, so the striated skirt and other accents are permitted enough strength to compensate in the lower. Observe how the radial lines in the skirt indicate the faces, how quiet the corners of the picture, and that the band on the dark skirt prevents any slipping down effect, breaks an awkward dark shape, and completes the work by stabilizing it and joining it with the frame. Observe the long graceful double curve from head to foot, and how the strong hand is received by it, also that the young woman's head is the apex of a pyramid, quite unobtrusively so, and that the heads, hands, etcetera, form a circle. Observe the lost and found line, the general softness of contour, with firm accents where required. By these means interest is retained. More precious than all is that which gives us the picture at all — the lighting! A small principal light-source high up at the side. There are few highlights, so they are valuable. There is enough modulation in the bass notes to permit of intense richness, but no more, — for interior shadows, in a scheme such as this, where the interest is in the lights, should be reserved. One would not see the shadows, but the lovely faces of the women at mass.

TALLER DE COSTURA

Here is a decorative picture, less sublime than the last, but of an engaging grace and cheerfulness. Here is happiness of industry when taken in a becoming spirit. It is a long picture, almost a horizontal panel, because it looks the longer by reason of its arrangement. This is not a typical Echague subject, yet the work bears his stamp and evidence of his genius. Realize what he has done. He has made a successful picture out of half



MUJEREL DE SEPULVEDA

J. ORTIZ ECHAGUE

a dozen girls sitting in a straight row, obliquely distributed across the picture space! In ordinary hands there would be monotony and a squeeze to the right edge, as though there were no way round the group. But Mr. Echague makes us lose our desire to get out, and turns the eye back as it approaches the boundary. He has varied the formality of the row of workers by causing one of them to lean forward and throw a playful remark at the love-sick damsel with the down-cast eyes. That bend outwards, as it were an unexpected movement, is not necessarily a discovery of Echague, for it has been done successfully by painters and I have seen it, though not hitherto so successfully, by photographers. It is not easy to do, but is more than sound. It is artistic when it succeeds. The tones form a scheme of pearly greys, both the few dark notes and reserved highlights being treated as luxuries. I hope that the excellent printer will render the pearliness of

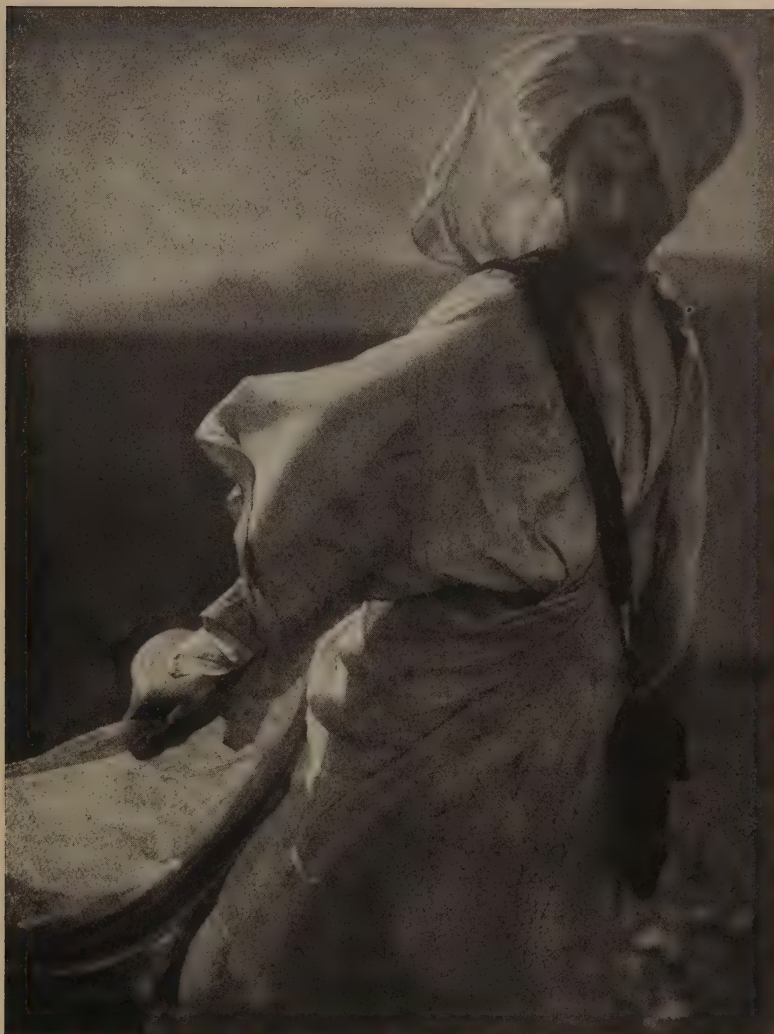
the half tones and thus retain the delicacy on which as well as on the certainty of the handling, the aesthetic beauty depends. Lest there be scattered interest, four of the heads are drooped. The laughing girl, having moved out of alignment, seems to assert herself particularly and to require the others collectively as foil, but whether one look at her, at the dreaming one, or at the little sewing maid, there is a little picture. This constitutes a gain, where it can be contrived without threat to unity. In the heads and frocks, even in the paneling, there is repetition, repetition with variety. Again there is an S curve, the fine one of the heads. Again simple lighting, light from one main source, holds a delicate scheme in unified embrace. Where light lingers there it brightens; were it general there would be no picture, and we enjoy the cheerfulness of a common sewing room in a photographic work of art.

MUJEREL DE SEPULVEDA

Here is one of those remarkable works typically Echague, that baffle description. It is incomprehensible, inscrutable. How did he conceive so unusual an arrangement? The pronounced right to left scheme of rich shapes, with the principal item of interest in a corner, yet a balanced composition, that thrills as it mystifies. Observe, too, the marked pattern of the skirt and the strong note of the tree, also in corners! What terrific pull! These two corner notes, and the oblique hand seen in relief against a considerable area of the dress of the imposing figure, are positively required to counter the opposite trend of the main lines, the line of the hand being further strengthened by the central head which continues it. Thus is equipoise achieved and opposing items are made harmonious. The emotion of the picture is enhanced by the pull of the elements, by the simple strength of line and mass, and particularly by the surprising placement of the strange historic face that rears itself over all. The profile of the central figure is purposely vague. It must not compete. It is but a connecting link. What a rich curve is formed by the hood in conjunction with the contrasting accents above! The uppermost woman is given immense importance by the long elliptic lines of the falling garment of stout cloth. She is paramount. The women are in sunshine. There is a hint of distance, that imperceptibly leads away to a softly dappled sky. Mr. Echague sends us four pictures, all very different. His others are as different and all bespeak his inexhaustible imagination.

MORO AL VIENTO

A graceful note to finish. Here not the severe scheme of the Women of Sepulveda, that betokens their life of stress, but a young Moor in the joy of life, braced by the wind and the sun of the morning. There is charm in the grace of the flying robes, as youth makes way, joying in the battle and the freshness of the breeze. Again much is in shade. Echague does not fritter his highlights, but makes them gleam by restraint elsewhere. Even here you see again the precious double curves. They are essentially flowing lines, thus suited to both motion and flying robe. But, you say, the figure is running out! Of course. Why the dickens do you always say the obvious thing? Usually wrong, here it is a triumph! The rule has been broken. All rules can be broken. That is one of the delights of pictorial photography. Unrest, the usual penalty, is prevented by the turned head, by the strong line of the hanging strap, by the immense lateral pull of the sunlit skirt and the hand that lightly holds it, by the feeling that the wind is checking the Moor's progress, and by the long vertical band that bounds the picture at the right. It is the battle with the breeze, the light-heartedness that makes this picture a delight. Much is unsaid, but readers must work out these pictures, as all in this series, and so gradually build up a sense of what is beautiful in construction and found thereon a sound personal originality.



MORO AL VIENTO
J. ORTIZ ECHAGUE

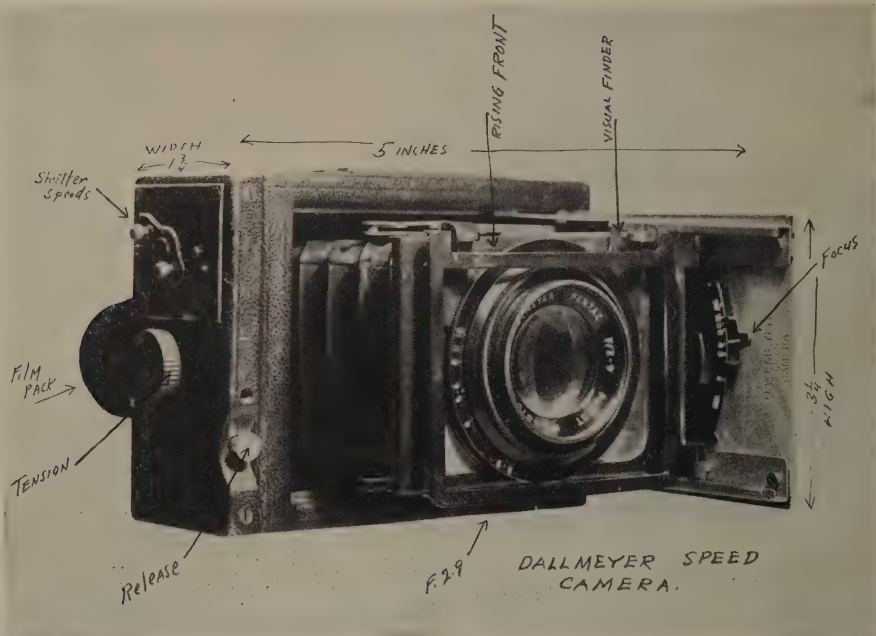


Figure 1

A. H. BLACKINTON

NEWSPAPER PHOTOGRAPHY

ALTON H. BLACKINTON

In resuming a series of articles on newspaper photography which will run through several issues of *AMERICAN PHOTOGRAPHY*, I shall begin by answering some of the many letters that have come to me from readers.

The following one is typical:

Casper, Wyo., Sept. 22, 1926

Mr. Blackinton:—

I am anxious to purchase a small, compact pocket camera that is suitable for practically all kinds of work. I want an outfit that can be made ready in a few seconds, one with a fast lens and rapid shutter and also having considerable depth of field at full opening. As I am traveling a great deal I see many "shots" worth taking but it is impossible for me to stop and set up a view camera and a graflex is too bulky for me to carry.

If you have used such an outfit as I desire, or have had any actual experience with one in your press work, will you be kind enough to tell me your opinion of it, and if I am not asking too much will you describe in detail its advantages and disadvantages if any. Thanking you for this information,

Very truly yours,
C. W. H.

The above letter is only one of several asking for information on the same subject. It is quite apparent that the amateur unfettered by the chains of habit realizes that it is not always necessary to pack a reflecting camera when a small speed outfit will do the trick as well.

The more cautious press photographer finds that there are many important assignments that should be covered with two cameras instead of one. How often have I wished, in the past, for a small auxiliary camera that would fit in my pocket and would be ready for instant use in case the "Big Boy" went dead on my hands, a not-at-all-impossible thing to happen even with the best of them.

This desire to have a second supply of ammunition, that would take up little room, and at the same time provide an insurance against losing the valuable picture, led me to investigate the many outfits such as our friend from Wyoming wants.

After perusing all of the magazines on modern photography, *AMERICAN PHOTOGRAPHY* included, I decided for my own part to try a Dallmeyer Speed Camera, vest pocket size, with a Pentac lens of 3-inch focal length and a speed of $f:2.9$.

After a year's work with this outfit under all kinds of trying conditions that the press photographer encounters, I feel that I may be able to give the information requested by our correspondent.

Before describing this particular choice of mine, let me say that, fortunately for all, there are many such cameras of many makes to choose from and the price is well within the means of any serious-minded worker who asks for a technically perfect piece of intricate mechanism, cunningly contrived, beautifully built, and capable of doing the work as well as the larger models.

I have found the Dallmeyer Speed camera to be all that was claimed for it. At the fullest aperture of $f:2.9$, the 3-inch Pentac lens has the same depth as a 6-inch lens working at $f:11$ on a quarter plate camera. Only those of you who have covered important news realize what this means on a dark, smoky day, when the lens must be used wide open in order to get an image.

The speed is sufficient for interior work that would be absolutely impossible with a lens working at $f:4.5$ (See Fig. 2).

The shutter of this outfit is a focal-plane affair, built as usual at the back of the camera, and is adjusted by setting a pointer to whatever exposure is required, and then obtaining the tension by turning a knob which winds the curtain. The exposures may vary from one-eighth of a second to one-thousandth, with a release for bulb and time thrown in. The pointer may be set for one-eighth, one-sixteenth, one-thirty-second, one-sixty-fourth, and so on up to the top speed of one-thousandth of a second.

The shutter can be released by pressing the clip at the top of the camera or by an antinous release. I use both methods, depending on the nature of the subject before me.

The focusing scale, located as usual at the front, is cleverly placed just below the lens and by means of a projecting pointer can be set for any distance from infinity to 6 feet. The distance is given in yards and with a little practice focusing is quickly mastered. Objects may be photographed at a closer range than 6 feet by moving the

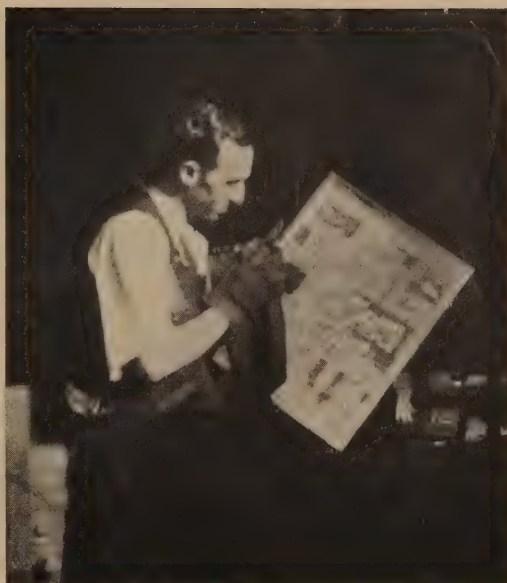


Figure 2

A. H. BLACKINTON



Figure 3

A. H. BLACKINTON

pointer all the way to the right, but this should be done only when the ground glass is used, for at that distance (3 to 5 feet) the focusing becomes critical.

Two oblong metal frames for composing or "sighting" the picture are provided and are used as a gun sight. When both frames are in alignment whatever is seen through the "sight" will be included in the picture. The camera may be used vertically as well as horizontally. The practice of sighting and estimating distance is of tremendous value to the photographer who may be called to suddenly whip his speed camera from his pocket and bang a picture. The skill required to do this, naturally, comes from long practice. With one of these small outfits it is no hardship to hold the camera at eye level and frame your composition. I have wiled away many a tedious train trip by practising in this way.

This particular type of photographic apparatus is so small that it is very inconspicuous and for that reason can be used to great advantage where "kidnapping" is resorted to.

The plate holders that are furnished with this camera are marvels of ingenuity. They are of the book type and the plates may be dropped into the holders without touching the plates with the fingers. And, strange though it may seem to the amateur who has not used a book form holder, they may be loaded and unloaded without removing the slide.

A film pack adapter forms an important part of my equipment, and practically all of the work I have done with this camera has been on Agfa film pack. I mention Agfa because of the metal case, which does not buckle and which will stand an unbelievable amount of rough usage in traveling.



Figure 4

A. H. BLACKINTON

A ground glass screen is furnished for focusing at the back of the camera. I carry this screen in my vest pocket and find that where I am particular about the composition of some nearby object it is no trouble to remove the plate holder or film pack, slip in the ground glass and, after focusing, replace the plate holder.

One thing perhaps should be mentioned here, that is, a warning about the violent perspective of all short focus lenses. After a few films have been exposed and the results pasted in a pocket notebook with complete data as to distance, light, exposure, and stop used, you will find the few pitfalls clearly defined and will know how to avoid them.

From the day that I received this camera, I have seldom been without it. Although it may be carried in a case flung over the shoulder, I prefer to carry mine in my coat pocket, and for protection I use a piece of soft chamois to wrap it in. With three or four of the tiny vest pocket film packs distributed in other pockets, I am ready for anything that may happen.

The first real stunt that showed the value of this type of camera came one hot summer day when I went to Police Headquarters to photograph some Japanese officials who were inspecting the local police department. As I released the shutter of the 4 x 5 graflex, the mirror went up as scheduled but the curtain budged not. It was stuck fast and no amount of shaking, pounding or tinkering would make it move.

I had carried the speed camera so much that I almost forgot I had it with me, but in fishing around in my pocket for a small screwdriver I encountered the "baby" and determined to give it a try.



Figure 5

A. H. BLACKINTON

Pulling the film tab on the pack I made six or seven exposures, ranging from $1/250$ of a second at $f:2.9$ to $1/32$ at $f:8$ in the sunlight.

All of the pictures were excellent except one made at six feet, which was out of focus. I had overestimated the distance. As these pictures were for the next edition, I pulled the films from the acid hypo bath and after a hasty rinse placed them, still wet, on a clean piece of 4×5 glass. This glass was then placed in the carrier of the enlarging lantern and the projected image thrown upon the opposite wall. By moving the carrier to different positions, and raising and lowering the printing frame, it was possible to make four 8×10 enlargements without touching the glass with the films stuck on it. This saved considerable time, for had four separate plates been used it would have been necessary to wash and wipe each plate, before and after the exposure. The handling of plates in hot weather, and changing them about in front of an arc light, is a ticklish matter, for they are very likely to melt, and the ease in which these

four tiny films were enlarged all at once made a decided hit with me.

While I am on the subject of enlarging from these small negatives let me say a word to critics who yell "Grain" the moment you mention a vest pocket edition.

While it is true that many of the prints from these films have a granular effect when enlarged to considerable size, I have not yet had a single print in which the grain was so pronounced that it could not be used for reproduction either by halftone or the rotogravure process. A screen is used in both processes of reproduction and this will take care of the grain that may be found in an 8×10 or an 11×14 enlargement. I have found that certain brands of plates are less liable to have grain than other brands, and the same with films. I have noted that certain developers will overcome this trouble if carefully compounded and used, but in a newspaper office, where everything is done slap-bang, it is not possible to dabble in dark room chemistry. I toss the films or plates in pyro or pyro-metol and take whatever I get in the way of "grain."

I have made some highly successful enlargements on 11×14 and 16×20 bromide paper, using the central portion of the picture (See Fig. 3). These prints were on exhibition at the Pinkham and Smith Co.'s stores in Boston. The grain was barely discernible at a little distance.

As it is nearly always possible to secure ample exposure with an outfit of this kind, the development need not be plugged at all. Thin clear films, rich in shadow detail, yield the best results, and with any brand of the numerous "vigorous" papers one can obtain satisfactory prints of any size up 11×14 . *Be careful not to overdevelop the negative!*

The low cost of operation (about 3 cents per exposure), when film packs are used,



AFTER THE THUNDERSTORM
EMILIUS BORRENBURG



PORTUARIA

GONZALO F. PRADO

makes possible the taking of many shots for experimental purposes. Being a commuter and having a thirty-minute ride over the ever-changing marshes that lie between Boston and my home town, I find many fascinating bits of composition as the train rolls along. I have taken over one hundred negatives of the scenery from the train windows (through the glass) and have secured some very interesting compositions in which the swirling clouds of train smoke figured prominently.

On one occasion I photographed a big fire from the window of the train. The film was developed on reaching the office and was used in the afternoon edition. This little camera is especially useful in photographing fires and the topic of "Four-Alarm Photography" will be dealt with in the near future.

Last winter I was assigned to cover the funeral of the late Colonel John Coolidge, father of President Coolidge, at Plymouth, Vermont. The village is absolutely isolated from the outside world, and the general store and post office carries a very limited line of photographic supplies and equipment. It was with a great sense of security that I moved about the bleak and barren country with my trusty speed camera tucked away in its chamois skin overcoat, for I knew that any time the shutter on the big graflex "froze," the little camera would do the trick. On such isolated assignments as this, it is almost a necessity that some kind of auxiliary camera be carried. Many of the boys take pocket



AT DUSK

Honorable Mention, Sixth Annual Competition

LOUIS F. BUCHER

cameras, but unless the lens is as fast or faster than their regular outfit, the auxiliary only becomes excess baggage.

Our party covered more than a hundred miles of that beautiful snow-covered country in an open sleigh. A temperature of 10 degrees below zero is not conducive to photography and had I not been able to hold the little camera beneath the robes, watching for a picture ahead, and quickly raising it to eye-level and pressing the release, I never would have made any pictures of Plymouth, Vermont, on that trip (See Fig. 4). To manipulate a reflecting camera from the seat of an old-fashioned sleigh in that weather is quite out of the question, as far as I am concerned.

On a similar pilgrimage with President Coolidge, I desired to make some shots showing the long line of Presidential cars winding down through the Vermont hills. There were a dozen automobiles in line, the President's car and the Secret Service cars in the lead. I was riding in the last car at the end of the line, and frequently noticed the unsuccessful efforts of the other photographers to make a picture of the entourage. Leaning out over the side of an automobile going 35 miles an hour and attempting to focus and snap a graflex is not an easy matter, as you doubtless know. But, sitting comfortably back in your seat, it is no effort whatever to hold a small folding camera to your eye, peep through the sight and snap whenever you wish. A simple pull of the film pack tab and you are ready for another shot.

On this particular trip, the President's car halted for a moment by a wayside stand

and the proprietor, a nine-year-old country lad, was so flustered at being suddenly confronted by the President of the United States that he could hardly offer the desired information as to which road led to Gilsum, N. H.

The news hounds considered this a bit picturesque and hollered for pictures, but as the car halted for only a moment it was not possible to make it. By the time the long line of cars were under way it was too late to use the graflex. I set the shutter of my speed camera for 1/500 second and as we passed the boy, still stunned by the appearance of the chief executive, I snapped his picture with the result shown in Fig. 5. By using a Universal tripod clamp and fastening the camera to the windshield or side of the car it would be possible to make as many shots of this kind as one wished.

In closing, may I say that the only disadvantage of this type of vest-pocket camera is the size of the negative obtained. This does not matter if you are a pictorialist and have a clean place to work. In the dust-laden workshop of a newspaper it is entirely different, and when these tiny negatives are being dried or even printed while still wet, great care has to be exercised to keep them as clean as possible. A piece of lint or dust that would be unnoticed on a 4 x 5 plate might cover the entire face of some important person in a group on a film as small as this. This is no fault of the camera or the film, but is something that must be reckoned with in the finishing of the picture, and after all that is what the editor wants. He cares not a whoop what you took the picture with, or how you did it.

For the amateur just beginning, this is a fine little outfit; capable of remarkable work when properly handled. For the local news man, it offers a compact camera that can operate on dark days and inside buildings at a minimum expense. For the traveler, it is the last word in photographic efficiency, and for the press photographer, it is a Graphic and Graflex, not only combined, but condensed; having the advantages of both and the disadvantages of neither.

AN IMPROVED BEE METER DIAL

(EXPOSURES FOR ALL STOPS INDICATED WITH ONE SETTING)

MILTON MCKEE BITTER



HE Watkins Bee Meter has been my constant and faithful companion for many years. Its only objectionable feature, aside from the bothersome reflections common to all brightly polished meter cases, is that it requires a resetting to get the exposure for various stops; but this I have overcome by designing a new dial which gives the exposures at all stops with one setting. I am passing this idea along to readers of this magazine in a way that will enable them to use it immediately.

Figure 1 shows my new design for the dial, as used in the meter, exact size. By cutting out this design (without the meter handle), cutting out the openings for the tints, and pasting the design on the glass disc in place of the regular dial, and then pasting the standard tints on the back (merely tip them on so that new ones can be put in occasionally), the dial is ready for use. The outer row of figures (these are rim figures) will be concealed under the rim of the meter.

In pasting the new dial on the glass use a transparent paste or cement and paste the entire surface of the dial on the glass, carefully pressing out air bubbles, and then carefully



THE CYNIC

BRUCE METCALFE

First Prize, December Senior Competition

clean off any paste or cement that may get on the glass at the tint openings; or the new design may be pasted on to the glass with glue in small dots around the edge. This may be the better way, as the application of glue or cement over the printer's ink may blur it.

In cutting the openings use a very thin, sharp blade or you are likely to tear the paper. The paper stock used in printing this magazine was not intended for the Bee Meter.

Those familiar with the Bee will instantly understand the method of using "The Bitter Dial." Simply set the actinometer time (the light test in seconds or minutes) at the plate speed; the exposures for all stops will be indicated on the opposite side without any resettings.

The regular dial of the Bee Meter uses only the bottom edge of the disc of sensitive paper, thus all the rest of the disc is wasted. You will note that my design provides two openings for the use of two tints so that the upper part of the disc can also be used. In

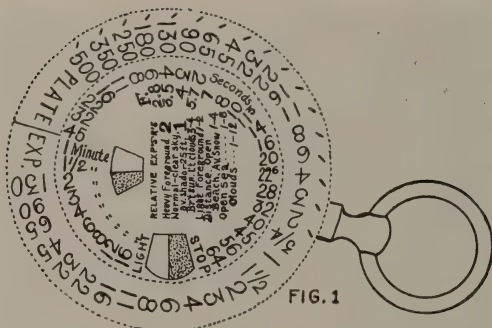


FIG. 1

course the upper one must be covered until the bottom edge of the disc of sensitive paper has all been used. This can be done either by wedging a piece of thin, opaque black or ruby paper or tin foil between the dial and the standard tint or by pasting a piece on the front of the glass, to be removed after the bottom part of the disc has all been used. The first way is the better one, inasmuch as light may leak in around the edges of paper pasted on the face of the glass.

Instead of using the regular tint for both openings you may prefer to use a quarter-tint for one of them. When using this for portraiture or interiors, for instance, the protecting slip of opaque paper (if placed inside) can be removed in subdued light without risk of the light affecting the sensitive disc.

Figure 1, as already stated, can be cut out of the magazine (without the meter handle) for use in your meter; but for those that do not wish to mutilate the magazine a separate design, Figure 2, is printed so that it may be photographed and you can make a print on thin, tough gaslight paper for yourself and another for your friend. Having a negative on hand will also enable you to make another dial should you happen to be so unfortunate as to spoil the first one which you make.

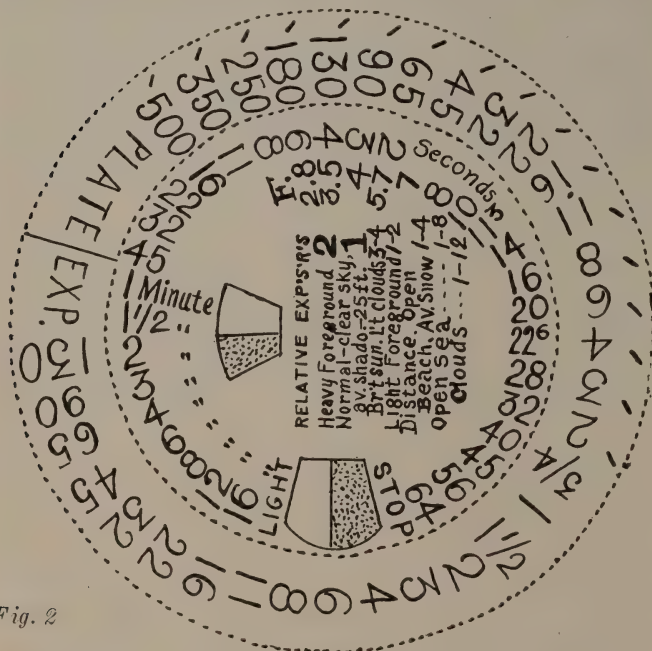


Fig. 2

this way, the number of "readings" or tests, may almost be doubled; about forty as compared with twenty-one.

In tipping on the two tints back of the openings they should be so cut that they will not overlap. Before pasting them on I would suggest the beveling of the edges of the backs of the black paper with very fine sandpaper or emery cloth so that the disc of sensitive paper will revolve easily.

If you cut out both of these openings, of

In making your reduced photograph of this design, Figure 2, the diameter of the outside dotted circle should be one and eleven-sixteenths of an inch. I suggest that you verify this by making a disc of plain paper this size and see if it fits your meter. The design is twice the size of the actual dial. Use a contrast developer with bromide and a hard matt printing paper. Don't use a glossy paper. This meter already gives too many reflections. It could be greatly improved by making the case of dull gun-metal or some other non-reflecting material, or leather-covered, instead of highly polished nickel.



LA BELLE VENETIENNE

E. J. G. SCHERMERHORN

Second Prize, December Senior Competition

After making your print go over the light figures with red ink, letting a little show over the edges.

Good luck to you!

BEE METER LIGHT TESTS. — Just a few words as to the method I am now using in making light tests with the Bee Meter.

I make open, direct light tests holding the meter in a position parallel with the lens and facing it (or in a relative position, if, for instance, I have to step out into the sunlight when my camera is positioned in the shade of trees, etc.) This method makes all allowances for side-light, overhead light, light ahead, etc., inasmuch as the light is falling on the sensitive paper from exactly the same direction that it falls on the object photographed.

If I am photographing with the light ahead, against the sun, I hold the meter, as stated, with the dial facing the lens and the sky, but not the sun, thus bringing the direct sunlight to the back of the meter. In this case, I give the exposure indicated, and a soft development, but with my usual developer, 2 grain pyro-acetone and the use of a Plaubel Anticomar, $f:4.5$, $8\frac{1}{4}''$, 5 x 8 lens, I have always found one-half of the indicated exposure quite sufficient for average view snapshots (foreground 25 feet from camera) except in extremely strong sunlight when the shadows are more intense and exposure should be very full to permit softer development.



EARLY MORNING

J. HERBERT SAUNDERS

Third Prize, December Senior Competition

I use a full reading only for portraiture, nearby dark-colored objects such as small brick buildings with foliage, bronze statues, outdoor close-ups (three-quarter length figures), interiors and other subjects of long tone-range.

In using Eastman Portrait Film for outdoor average views, for instance, I rate it at 500 instead of the regular Watkins 250. With this rating I never fail to get adequate shadow detail in photographing a residence from the opposite side of the street.

In making my light test I expose the disc with my eyes partially closed, until the edge of the standard tint blends with the sensitive paper; or, sometimes, I let the disc become the least bit darker than the standard tint and then deduct a second or two from the test time, in a moderate light. Thus it will be seen that I always make a very full test tint.

It should also be noted that I do not, ordinarily, use a developer stronger than 2 grains of pyro to the ounce, and I never use an alkali; I use acetone instead (not acetone sulphite).

In England, where the Watkins meter is made, stronger developers are in general use, I believe, and atmospheric conditions differ much from those in the United States in the same latitude — much more haze and fog.

Under dull skies it is sometimes difficult to match the tint. The thought should be to “cook” it or “bake” it until it is “well done,” as your cook would say, and has the same depth of color as the standard tint, though not actually the same color. When



THE WINDOW

KATHERINE M. ANDERSON

Second Prize, December Junior Competition

the light tests forty-five seconds or more I usually deduct 20% from the actual time in making my reading of the exposure.

I do not find that the blue glass dial helps me at all, though, strange to say, when I use an old pair of 25 cent seaside spectacles, with a kind of smoked blue lenses, they help very much.

In Dr. B. T. J. Glover's recent excellent little book, "Perfect Negatives and How to Make Them," he advises the use of the Watkins or Wynne Meters as follows:

"Measure the light which falls upon and illuminates the darkest part of the subject. * * * Place the meter in the shadow squarely facing the best light illuminating the shadow. * * * Test the light which falls upon the worst lighted or darkest part of the subject."

This is the method advised in the Watkins Bee Meter booklet of instructions. But the Doctor says further:

"An average subject represents a range of tone brightness of about 30 to 1. A good plate can record a range of tone brightness of 200 to 1. * * * We could multiply the exposure by 6 and yet the subject would only be worth 180 from an exposure point of view and could still record itself on the plate with truth. * * * With an average subject we can multiply the minimum exposure by six and yet not cause the highlights to be overexposed. * * * We shall get a thick, dense negative certainly, full of silver

in every tone, but although it will take longer to print, it will yield a true print of perfect quality. Doubling the meter exposure safeguards against underexposure and entails but little risk of overexposure. We can, therefore, rule that the exposure to give in ordinary work is that indicated by the exposure meter multiplied by two. * * * With long range subjects of high contrast the exposure indicated by the meter should be given."

(The long range, that is, long tone-range subjects to which Doctor Glover refers are as follows: interiors generally; indoor portraiture; subjects under trees, which include sky, and, in the near foreground, very heavy shadows; snow scenes which include dark tree trunks or buildings near the camera.)

"An estimation of the adequacy or otherwise of the exposure is made by comparing the amount of silver in the shadow tones of the negative with the amount present on the edges of the plate which have been protected from light action in the camera. For this purpose the negative is laid on white paper for inspection."

I might state, incidentally, that Doctor Glover uses a pyro developer containing three-fourths as much potassium metabisulphite as pyro in the stock solution, or the Eastman M. Q. 25, which contains $6\frac{1}{2}$ minims of 10% solution of potassium bromide to each ounce of ready to use developer.

Those wishing to try Doctor Glover's method of making the Bee Meter light test (the true Watkins method) and then doubling the indicated exposure, may find it inconvenient at certain times or places to test the actual shadows of the subject. In such cases practically an equivalent test can be made by holding the meter in the shadow of one's own body.

A beginner in using any meter, if wise, will make at least four different exposures; develop and make prints, and thus arrive at his own conclusions. Always judge the negative by the print, particularly a pyro negative. Proofs on P. O. P. (Solio, Kresko, Eastman Proof Paper, etc.) will answer quite as well, except that, being of a reddish or purple color, they will not have quite the snappiness or brilliancy of black and white prints.

It is not necessary to use an entire plate (5 x 7 or larger) to make each of these exposures. Masks can be used and a detail, with shadows, of some prominent subject can be photographed four times on the same plate. This would assure the same development for each of the four. If smaller plates or films are used they should be "tanked."

It is better to use four different shutter speeds rather than four different stops at the same speed, so that all negatives will have the same degree of sharpness and thus can be more accurately compared.

Don't make your tests on other than a clear day when light conditions will remain uniform during the period of the test.

The personal equation (the depth to which each individual carries his tint) always enters into this matter of making light tests.

I repeat, that for average views (normal shadows, 25 feet from lens), I use the open direct-light test, tinting fully, and giving one-half the exposure indicated, except in extremely strong sunlight, when I give more. Before setting my dial I pause a few moments to carefully study the color or light contrasts (tone range) in the subject and make my plate ratings accordingly.

To illustrate: the Eastman Kodak Co. rates its Portrait Film at 100% and its Commercial Panchromatic Film at 70%. The Defender Co. Standard Orthonon is rated at 80%. So when using these emulsions I rate them as follows (double the Watkins rating) for average views and give the exposure indicated:



GALLINE

CARLO BARAVALLE

First Prize, December Junior Competition

Eastman Portrait Film	Watkins 500
Defender Co. Standard Orthonon	Watkins 400
Eastman Com. Panchromatic Film	Watkins 350 or 300

A big question? Do you know what your shutter speeds are? If you don't, you don't know what exposures you are giving. Probably not one shutter in a hundred, even among the best, is accurate according to all of the markings. I use a Wynne Shutter Speed Tester. From one second to 100th it works all right. Beyond that it is difficult to judge results.

To make tests of high speed exposures, without special equipment, some idea may be gained of the relative speeds by making density tests and comparing the negatives with one made with a known shutter speed.

If you have a verified 1/100th, make a clear-sky exposure at that speed at $f:11$ or thereabouts, and then others at your higher speeds. Tank the negatives and compare the densities by laying them on smooth white paper. It is rather difficult to do this by inspection. Make a slow printing of each negative on gaslight paper — same time for each — noting that the light does not vary (electric currents from central plants sometimes do that) at a distance of two or three feet from your electric bulb and develop the several strips of paper together for exactly the same time. Fix and inspect the prints in subdued daylight.

PICTURES OF PEOPLE

WILLIAM LUDLUM



NO MATTER how much may be said to the contrary, pictures of people are more popular than pictures of places, that is, of course, with the average person. To prove this, it is only necessary to look over the daily receipts of films taken in by any developing and printing agency, or, for that matter, turn the pages of any vacationist's souvenir album. In either case, the great majority of prints will be found to be of people, and although they may have the personal experience charm of having been taken "when we were at this or that place," the surroundings are usually sacrificed to the individual or group as the main interest. This either results in the obliteration of some real scenic beauty, which might have been retained by a little forethought in posing the human elements of the picture, or in the introduction of objectionable objects by way of promiscuous ornamentation, such as telegraph poles or lamp-posts sprouting from the tops of heads, glaring advertising signs or other incidentals of foreign extraction, not actually seen by the "taker" until the print is developed. I know whereof I write, because I used to do this sort of stunt myself and do it often, and then be foolish enough to feel extremely sore at myself when viewing the result. But time, and the experience gained in looking over many a print collection while listening to the lavish floods of praise spilled by other "lookers," has inclined me to the belief that after all it doesn't really much matter whether the much-talked-of artistic atmosphere is lacking or not — as long as the audience is satisfied. In my own particular case, pictures that I have been utterly ashamed to acknowledge as mine, have received, by far, more praise than some of my pet compositions. If the print under examination happens to be a fairly decipherable likeness of Tom, Dick or Harry, or any other person known to the beholder, the immediate surroundings, no matter how inappropriate or incongruous, are nearly always completely overlooked. And, as I like to please my friends and vacation acquaintances, for some time past I have set aside my own first choice in picture material selection, to give them what they crave. I have put people ahead of place, and snapped them wherever they happened to be at the time, regardless of any or all consequences to my artistic (?) reputation.

In making the above statement, I have possibly somewhat overdrawn; I don't mean to infer that I have at all times sacrificed the possibility of a fairly good background, or that I have included unpicturesque material when it could be eliminated; what I refer to, most of all, is the posing and distribution of the people in the picture. The proper way to make up a landscape with figures, from a pictorial viewpoint, is to pose them, not as a party of "look pleasants," staring straight into the brilliant eye of the lens, but to so space them in the composition as to give the appearance or impression that they belong in the picture as *part* and not *all* of it. They should be placed and distributed as though they were thoroughly at home with their surroundings, while sitting, standing, walking or whatever else they choose to be doing; but, in no case, looking at the lens, except when straight portraiture is intended. See any of the many splendid examples of Kodak advertising to prove this — if the subject being photographed but bat so much as an eyelash at the camera, the picture never gets by the demands of the publicity department. I know this, but notwithstanding, as I have already hinted, I throw much of this specified formula to the winds of chance, taking



STUDY
ARTHUR MURAY

pictures of people where all eyes are to the front and giving a great deal of pleasure to others, thereby. If my optics are so constituted that I almost invariably compose a picture in the finder before snapping the shutter, it is a habit that I cannot altogether overcome, but I have arrived at the point where I do not let this stand as an obstacle to the whims or wishes of my friends. I do as they would have me do, and have no regrets. Probably very few of the pictures taken under such conditions would measure up to the required artistic measurements of any of the photographic magazines, or pass the critical judgment of the "hanging" committee; but they please a whole lot of good people, and that pleases me more than I can express.

I am not writing this as a plea or excuse for careless picture making, not by any manner of means, but as a bit of encouragement for all those who do not possess the "artistic sense," but still like to take pictures. While there can be no question of the great desirability of pictures which have proportion and balance, shading and tone, conforming to the rules of good pictorial composition, in preference to those retaining none of these features, the undisputed fact remains that many pictures which give great pleasure to countless numbers of contented persons would not even muster in the class of "honorable mention." I am a strong advocate of the pictorial instruction to be derived by following the many articles in *AMERICAN PHOTOGRAPHY*, and cannot too strongly recommend their perusal to all those wishing to improve the quality of their picture output; but I have a soft spot in my heart for all members of the photographic fraternity, whether "artists" or not. I would say to those who take pictures for pleasure only, don't let any set of hard and fast "rules" of composition deter you from keeping at it. Kodak whenever and wherever you go. The family snapshot album is a veritable treasure-house of visualized memories, is always a pleasure and ever a profit — in spite of the critics. If you find it too difficult to work out the puzzle of people and place so as to make all the parts fit in the picture, take the people, your friends, and many a "something good" will be "said" of you, while you are still alive to hear it.

INTENSIFICATION — II

E. J. WALL, F. C. S., F. R. P. S.



ONE METHOD of intensification that has attracted much attention, possibly because of its not requiring the poisonous mercury salts, and the comparative freedom from stains, is with chromium. This is probably based on Eder's ⁶¹ method of harmonizing harsh negatives.

The most complete research on this method was carried out by D. Carnegie & Welborne Piper⁶². The following were the solutions recommended:

	A		B		C	
Potassium bichromate	10 g	80 gr.	20 g	160 gr.	20 g	160 gr.
Hydrochloric acid	2 ccm	16 min.	10 ccm	80 min.	40 ccm	320 min.
Water	1000 ccm	16 oz.	1000 ccm	16 oz.	1000 ccm	16 oz.

The negative should be immersed in one of the solutions till bleached, washed free from yellow stain and developed with amidol. If any other developer be used it may be necessary to expose the plate for a short time to white light. A gives the most intensification,



PROF. F. GUADAGNI — PORTRAIT

R. VIDAL

Honorable Mention, Sixth Annual Competition

about equal to mercury followed by ammonia; B equals mercury and ferrous oxalate; C equals mercury and sulphite. The method may be safely used after fixation of the plate if it be rinsed for a minute or two. It may be repeated several times if thought desirable.

Overexposure to light, or too strong a light, prevents redevelopment. If too strong a light be used during redevelopment, stains may be caused. Insufficient washing after bleaching also produces stains. When these occur the remedy is to rebleach in:

Potassium bichromate	20 g	160 gr.
Hydrochloric acid	20 g	160 gr.
Water	1000 ccm	16 oz.

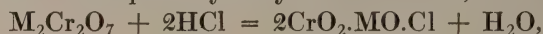
Wash well and redevelop; this does not intensify. Instead of this a 2 per cent solution of thiocarbamid with an equal weight of citric acid may be used.

A. J. Garwood⁶³ stated that with most developers the film stripped from the glass, amidol alone being free from this defect.

C. H. Bothamley⁶⁴ dealt at some length with this process and proved that increase in density was due to the decomposition of the chromate of chromium in the bleached image, some chromium compound being deposited. But with the C formula the chief cause of the density increase was the larger size of the image grains. Great stress was laid on the necessity for very accurate measurement of the acid; it was, therefore, advisable to use a 10 per cent solution of this, instead of the concentrated, as less likely to give rise to errors. The substitution of an alkaline chloride did not give such good results.

J. M.⁶⁵ suggested the use of potassium metabisulphite for removing the yellow stain of the bichromate; but it must be used with caution, otherwise reduction of the image occurs.

Lumière & Seyewetz⁶⁶, after referring to the work cited above, pointed out the necessity of a small and correct amount of acid and assumed that when there was no intensification the chromium compound dissolved in the acid. They considered that the bleaching agent was a definite compound of hydrochloric acid and bichromate, as did Carnegie & Piper, namely potassium chlorochromate. This and the corresponding compounds of ammonia and sodium were prepared and found to act well. A strong solution of the bichromate was treated with a quantity of hydrochloric acid, calculated from the equation:



M here being either potassium, sodium or ammonium. The mixture was to be evaporated to crystallization. A 3 per cent solution can be used for plates and 2 per cent for papers.

Assuming that ammonium bichromate and c. p. acid of sp. gr. 1.16 be used, this means practically 252 grams or grains of the salt and 67 ccm or minims of the acid, with the formation of 305 grams or grains of chlorochromate, which can be conveniently made into a 10 per cent stock solution by diluting to 3050 ccm or 6 oz., 170 min. There is no need to evaporate to crystallization, as long as the mixture is evaporated down somewhat.

If hydrobromic acid be used in place of the hydrochloric, a dark brown liquid, evolving bromine, was obtained. The crystals thus obtained had no action on the silver image.

The action of the chlorochromate may be assumed to be as follows:



The first formula on the right hand of the equation is assumed to be a double chromite of silver and alkaline metal. On development the silver chloride is alone reduced to the metallic state. The chromite compound is brownish, and if the intensification be re-



TORI OI

TOYO MIYATAKE

Pittsburgh Salon, 1926

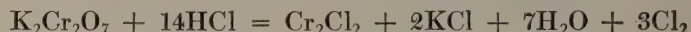
peated, this color is intensified. It will be seen that the intensified image contains only half the original silver in the metallic state, and with repeated bleachings this is each time reduced to half. After five intensifications the quantity of metallic silver is so reduced that no further action accrues. After two intensifications, the image contained 33.3 per cent of chromium and 66.6 of silver; after six treatments 58.5 of chromium and 41.5 of silver.

R. E. Crowther⁶⁷ questions the above conclusions arrived at by Lumière & Seyewetz, pointing out that the following bath:

Potassium bichromate	10.5 g	80 gr.
Hydrobromic acid, 25 per cent	10.5 cm	80 min.
Water	1000 cm	16 oz.

bleaches a negative and a black, strong intensification is obtained. The buff color of the bleached image is more pronounced; the bath acts as rapidly as the hydrochloric bath

and the intensification is greater. He refers to a previous paper⁶⁸ which supports his views that chlorine in the nascent condition is formed, thus:



If instead of removing the chlorine by heat, the solution is applied to a silver image, the chlorine is removed and a chromium salt produced. When of the strength used for intensification, the amount of hydrochloric acid is insufficient to form a normal chromic salt, consequently a hydrated or insoluble salt is formed, contiguous to or surrounding the silver chloride. The chromite formula is strongly objected to. Crowther assumes that confirmation of his views are given by the above bromide bath and that silver bromide is formed with some basic chromic salt with adsorption of chromic acid. A developer reduces the bromide to metallic silver and the chromic acid to hydrated chromic oxide, or more probably chromic hydroxide.

Summing up, one may say that the chromium intensifier is one of the most practical and least likely to go wrong in an amateur's hands. The fact that it may be repeatedly used is also in its favor.

Carey Lea⁶⁹ had suggested the use of cupric chloride for bleaching collodion negatives, with subsequent sulphiding, the resultant image consisting of the sulphides of copper and silver. W. Abney⁷⁰ suggested, also for collodion, the use of cupric bromide, by which the image was converted into silver bromide with formation of cuprous bromide. The bleached plate was treated with pyro-ammonia or flooded with silver nitrate, when the following reaction took place:



So the final image was a mixture of metallic silver and silver bromide.

F. Stolze⁷¹ used the copper bleach and developed with eikonogen. S. Bottone⁷² applied an 8 per cent solution of ammonia. W. T. Ingall⁷³ preferred a mixture of cupric chloride and nitrate, developed, and then immersed in a 5 per cent alcoholic solution of formic acid.

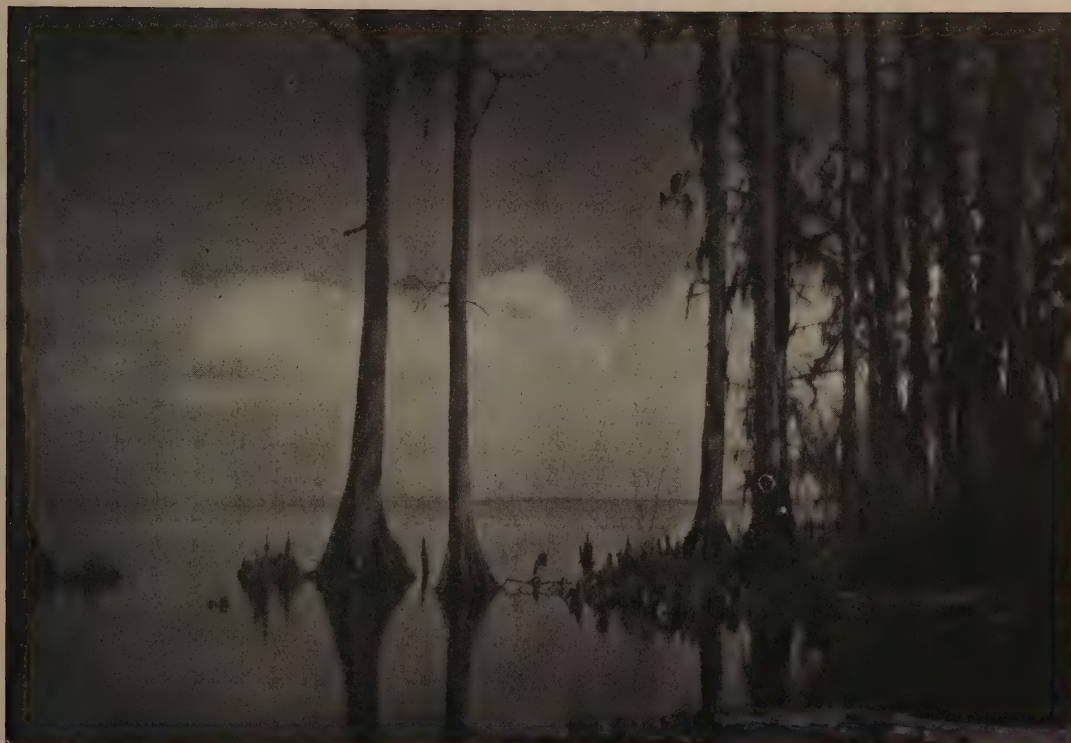
R. E. Liesegang⁷⁴ pointed out that cuprous bromide was soluble in water, so that the bleached plates must not be washed too long. In a later paper⁷⁵, he stated that if the negative is insufficiently washed after treatment with the cuprous bromide, there is no blackening, as the copper salt left in the film forms silver bromide, which prevents access of the silver nitrate to the cuprous salt. Repeated applications, or the use of a stronger solution, then give satisfactory results. After treatment with the silver nitrate, the plate must be thoroughly washed or, better still, placed in a fixing bath, but in the latter case all copper bromide must be washed out or the image will be much reduced.

R. E. Blake-Smith⁷⁶ modified the bleach, using:

Cupric sulphate	21.5 g	320 gr.
Potassium bromide	21.5 g	320 gr.
Sulphuric acid c. p.	12.5 g	96 gr.
Sodium sulphite, dry	3 g	23 gr.
Water	1000 ccm	16 oz.

The bleached negative was then washed in five changes of:

Sodium sulphite, dry	2.5 g	20 gr.
Sulphuric acid	10 g	80 gr.
Water	1000 ccm	16 oz.



LAKE SALVADORE

HAROLD K. FREDERICK

The immersion is about 3 minutes in the first bath and 4 in the others. It should then be immersed in a dish of water for 5 or 10 minutes and blackened in:

Silver nitrate	16.5 g	128 gr.
Nitric acid c. p.	16.5 g	128 min.
Water.....	1000 ccm	16 oz.

A. Callier⁷⁷ stated that this intensifier was first suggested for gelatine plates by M. Fery. As generally used it was uncertain, but the following method gave sure results. Bleach in:

Cupric sulphate	25 g	192 gr.
Potassium bromide.....	25 g	192 gr.
Water	1000 ccm	16 oz.

Pass the bleached plate through three or four baths of 2 per cent glacial acetic acid, in each of which it should remain 5 minutes. Wash with distilled water and immerse in 2 per cent solution of silver nitrate. Again wash in distilled water, and immerse in weak solution of salt, which precipitates excess silver. This precipitate can be dissolved with 10 per cent sodium sulphite. Finally redevelop in daylight with amidol.

The intensification is great; the grain is slightly enlarged, but so little that fine lines are not choked up. The process may be repeated several times.

H. Jefferys⁷⁸ was strongly in favor of this method with silver or sulphide. Blake-Smith⁷⁹ contended it was unreliable, as the cuprous oxide was oxidized or partly washed out in the bleaching, especially in the shadows. The only reliable method, however, was his as given above.

W. P. Jenney⁸⁰ proposed the addition of some iodide of copper to the bromide with subsequent development with hydrochinon, etc. This appears to present no advantages.

J. Desalme⁸¹ pointed out that silver chloride is the best salt for obtaining dense black deposits, therefore the most suitable for intensification. Starting with this and using sodium stannite, a very powerful intensifier is obtained.

The well-washed negative should be bleached in:

Cupric chloride	25 g	192 gr.
Hydrochloric acid	4 ccm	30 min.
Water	1000 ccm	16 oz.

Obviously a mixture of cupric sulphate 47 g (361 gr.) and salt 11 g (85 gr.) may be used to form the chloride.

The bleached plate should be washed for a minute or two and flowed with just enough of the following to cover it:

Stannous chloride	28.5 g	219 gr.
Water	250 ccm	4 oz.

Dissolve and add

Caustic soda	22 g	169 gr.
Water	750 ccm	12 oz.

It is advisable to add nearly the whole of the soda lye till there is only a little precipitate left, then add the remainder in very small lots, stirring well, till a clear solution is obtained, then make up to bulk. Excess of soda should be avoided. Filter the solution, which must be made just before use.

As soon as the image is blackened, rinse and immerse in 2 per cent solution of sodium bisulphite, then wash. If the intensified negative be immersed in 5 per cent solution of caustic soda and again treated with the stannite solution, a warm brown image is obtained, which from its color gives still greater intensification. L. P. Clerc⁸² examined this process and found it very satisfactory. Practically it increases every density 1.66 times, whereas Chapman Jones states that mercury and ferrous oxalate only gives 1.45 increase.

Physical intensification by means of nascent silver was used with collodion plates. An acid solution, preferably of pyrogallol, or gallic acid, to which a few drops of silver nitrate were added, was poured on to the negative. The silver nitrate was reduced by the developing agent and deposited on the existing image.

As to who was the first to use this for gelatine plates does not interest us. We can ignore all these acid solutions, because they are open to the serious objection that red fog is induced by the formation of colloidal silver in the gelatine. It must be recognized that collodion has but little affinity for silver; further that the collodion film is very much thinner than the gelatine and in the wet plate process the negative image lies practically on the surface of the film and is not imbedded in it, as is the case with gelatine.

The first process that was markedly different was suggested by Howard Farmer⁸³. He precipitated silver bromide, washed and dissolved it in hypo solution. Some of this was mixed with a little sulpho-pyrogallol, this being a pyro solution with sulphite suggested by Berkeley, and then ammonia added. The main points in this are that the solution was alkaline and there was no necessity to free the plates from hypo.

W. K. Burton⁸⁴ proposed to make an emulsion of silver bromide in a thin aqueous (0.25 per cent) solution of gelatine, then add pyro-ammonia. He admitted that the results were not very good. The experiment is worth nothing, however, because the gelatine would act as a protective colloid, thus tending to the formation of a fine grain.



COMBING THE FLAX

MRS. MINNA KEENE, F. R. P. S.

Honorable Mention, Sixth Annual Competition

J. B. B. Wellington⁸⁵ gave a method in which sulphocyanide of silver was dissolved in hypo, mixed with pyro, sulphite and ammonia, and applied to the plate. This was improved the following year. This was apparently entirely neglected for about seven years, then it was reprinted in a foreign journal with an error in the conversion of the weights and measures. J. Gaedicke⁸⁶ examined it and it was claimed by H. Schmidt as original⁸⁷, regardless of the fact of the prior publication in 1899.

A much improved formula was also given by Wellington⁸⁸, which avoided many of the difficulties of the prior process. It is advisable to fix the negative in fresh hypo, wash well and treat with 5 per cent formaldehyde solution for 5 minutes. Then immerse for exactly 1 minute in either of the following baths:

A.—Potassium bichromate	1 g	0.8 gr.
Potassium bromide	20 g	16 gr.
Hydrochloric acid	60 ccm	48 min.
Water	1000 ccm	16 oz.
B.—Potassium ferricyanide	20 g	16 gr.
Potassium bromide	20 g	16 gr.
Water	1000 ccm	16 oz.

The first bath is to be preferred. There should be no visible action in this bath and the time must be strictly adhered to. After a few minutes rinsing the plate may be intensified.

Two stock solutions, that will keep good for years, should be made:

A.—Silver nitrate	83.3 g	640 gr.
Distilled water to	1000 ccm	16 oz.
B.—Hypo	146 g	1120 gr.
Water	1000 ccm	16 oz.

For use 24 parts of A are added to 24 parts of B, stirring well. A clear solution should be the result, but if the stirring is omitted it may be turbid. To the mixture is then added 6 parts of 10 per cent solution of pyrogallol, preserved with sulphite, and 12 parts of 10 per cent ammonia.

The plate should be placed in a chemically clean dish and the mixture poured over it. Intensification begins in a minute or two. As soon as sufficient density is attained, fix in an acid hypo bath until the slight pyro stain is removed. Wash and rub the surface with a wet swab.

The great advantages of this method are that the intensification is proportional throughout. The action is readily seen. It can be stopped at any stage and the results are permanent.

G. Balagny⁸⁹ proposed adding a 25 per cent solution of hypo to 5 per cent silver nitrate till a clear mixture was obtained. The plate was immersed in this and redeveloped with hydrochinon or pyro.

R. E. Blake-Smith⁹⁰ proposed a rather complicated method of first chloriding the image, treatment with acid sulphite, exposure to light and physical development with acid-metol-silver, or a corresponding pyro solution or Wellington's silver-sulpho-pyro mixture and final fixation.

Von Hübl⁹¹ had suggested a mixture of metol or hydrochinon, acid and silver. G. T. Harris⁹² also used hydrochinon-silver, citric and nitric acids. G. Hulett⁹³ stated that physical intensification could also be carried out with mercury in place of silver, and this was advised by R. S. Browne⁹⁴.



COMPOSITION
F. DRTIKOL

NOTES

61. *Phot. Korr.*, 1881, 18, 111; *Handbuch*, 1883, 180; *Phot. News*, 1881, 25, 262. Cf. G. Hauberrisser, *Jahrbuch*, 1903, 17, 126. E. G. Simpson, *Brit. J. Phot.*, 1919, 66, 571, W. M., *ibid.*, 1881, 28, 175, and J. S. Teape, *ibid.*, 1904, 51, 272; *Jahrbuch*, 1904, 18, 473 also recommended bleaching with the same mixture and redeveloping.

62. *Amat. Phot.*, 1904, 397; 1905, 453, 475, 505; *Jahrbuch*, 1905, 19, 420; *Brit. J. Almanac*, 1906, 794; 1909, 585; *Brit. J. Phot.*, 1906, 53, 702; 1907, 54, 3, 879; 1909, 56, 774, 857; 1916, 63, 21. Cf. Sellors, *Brit. J. Phot.*, 1904, 51, 1074; *Jahrbuch*, 1911, 25, 518.

63. *Brit. J. Phot.*, 1907, 54, 829.

64. *Phot. J.*, 1918, 58, 53; *Brit. J. Phot.*, 1918, 65, 111, 123; *Brit. J. Almanac*, 1919, 278. Cf. W. T. Cunningham, *Phot. J.*, 1916, 56, 2.

65. *Brit. J. Phot.*, 1918, 65, 87.

66. *Ibid.*, 1919, 66, 451; *Brit. J. Almanac*, 1920, 370.

67. *Brit. J. Phot.*, 1919, 66, 709; *Brit. J. Almanac*, 1921, 368.

68. *J. S. C. I.*, 1916, 35, 817.

69. *Phot. Archiv.*, 1865, 6, 145.

70. *Phot. News*, 1877, 21, 171.

71. *Phot. Nach.*, 1891, 3, 4; *Jahrbuch*, 1891, 5, 484; Cf. F. Schmidt, *Phot. Nach.*, 1892, 4, 186; *Phot. Annual*, 1893, 98.

72. *Yearbook of Photography*, 1891, 115; *Phot. Annual*, 1891, 89; *Phot. Korr.*, 1891, 28, 133; *Jahrbuch*, 1892, 6, 406.

73. *Brit. J. Almanac*, 1892, 632.

74. *Phot. Archiv.*, 1894, 35, 337; *Phot. Annual*, 1895, 176.

75. *Phot. Archiv.*, 1896, 37, 114; *Phot. Annual*, 1897, 186.

76. *Brit. J. Phot.*, 1909, 56, 83.

77. *Bull. Belge*, 1911, 18, 165; *Brit. J. Phot.*, 1911, 58, 452; 1916, 63, 22; *Brit. J. Almanac*, 1912, 603.

78. *Ibid.*, 1910, 57, 541.

79. *Ibid.*, 1910, 57, 561. Cf. *ibid.*, 598. The Aktiengesellschaft f. Anilinfabrikation, *D. R. Pat.* 201,168, 1907; *Chem. Ztg. Rep.*, 1908, 468; *Brit. J. Almanac*, 1907, 586, introduced a dry copper intensifier, which was stated to be anhydrous cupric sulphate and sodium or potassium bromides, but in larger propor-

tions than the combining weights. Eder, *Jahrbuch*, 1909, 23, 391, stated that this was nothing more than copper sulphate, potassium ferriocyanide and citrates.

80. *Anthony's Phot. Bull.*, 1893, 24, 169; *Phot. J.*, 1894, 24, 176; *Phot. Nach.*, 1893, 329; *Jahrbuch*, 1894, 8, 414; *Phot. Annual*, 1894, 85. This was recommended *Phot. J. Amer.*, 1922, 59, 326; *abst. Amer. Phot.*, 1923, 17, 53, as a toning bath for prints.

81. *Bull. Soc. franç. Phot.*, 1912; *Brit. J. Phot.*, 1912, 59, 215; 1913, 60, 500; *Jahrbuch*, 1912, 26, 500; *Phot. Coul.*, 1912, 7, 85. Cf. R. Namias, *Phot. Korr.*, 1913, 50, 634; *Jahrbuch*, 1914, 28, 351. A. Neugschwender, *Phot. Ind.*, 1910, 1462; *Brit. J. Phot.*, 1910, 57, 870; *Brit. J. Almanac*, 1912, 605.

82. *Brit. J. Phot.*, 1912, 59, 215.

83. *Phot. News*, 1887, 31, 803; *Phot. Rund.*, 1902, 153; *Phot.*, 1902, 453; *Phot. Woch.*, 1902, 48, 226; *Jahrbuch*, 1903, 17, 512.

84. *Brit. J. Phot.*, 1888, 35, 164, 180.

85. *Brit. J. Almanac*, 1889, 575; 1890. Cf. Richmond. *Phot. Archiv.*, 1890, 31, 91; *Phot. Annual*, 1891, 188.

86. *Phot. Woch.*, 1897, 43, 98, 136; *Brit. J. Phot.*, 1897, 44, 264, 294. Cf. H. J. Channon, *Brit. J. Almanac*, 1899, 759; J. S. Henry, *Jahrbuch*, 1898, 12, 24.

87. *Phot. Woch.*, 1897, 43, 37, 53, 98; *Brit. J. Phot.*, 1897, 44, 295.

88. *Amat. Phot.*, 1911, 89; *Brit. J. Phot.*, 1911, 58, 551; 1916, 63, 21; *Brit. J. Almanac*, 1912, 604; *Phot. Chron.*, 1911, 18, 370; *Jahrbuch*, 1912, 26, 501.

89. *Brit. J. Phot.*, 1897, 44, 552.

90. *Ibid.*, 1909, 56, 82; 1910, 57, 42.

91. *Phot. Korr.*, 1891; *Brit. J. Almanac*, 1891, 714.

92. *Brit. J. Almanac*, 1903, 776; *Jahrbuch*, 1903, 17, 573. Cf. W. P. Wiseman, *Brit. J. Almanac*, 1896, 722; *Edit. Phot. Woch.*, 1891, 37, 70.

93. *J. C. S.*, 1901, 493; *Amat. Phot.*, 1901, 226; *Jahrbuch*, 1902, 16, 560.

94. *Camera Craft*, 1919, 233; *Brit. J. Phot.*, 1920, 370. C. W. Philpot, *Phot.*, 1913; *Brit. J. Almanac*, 1914, 683, and R. E. Crowther, *Amat. Phot.*, 1912, 548; *Brit. J. Almanac*, 1914, 683 preferred hydrazin and silver.

To be Continued

THE DUPLICATION OF MOTION PICTURE NEGATIVES

J. G. CAPSTAFF AND M. W. SEYMOUR

(Communication No. 294 from the Research Laboratory of the Eastman Kodak Company, Rochester, N. Y.)

The making of a first class duplicate negative calls for greater skill and makes greater demands upon the materials than appears at first sight.

A perfect duplicate negative would be one which would give prints identical in every respect with those obtainable from the original. This means that the duplicate negative should have perfect tone reproduction and definition or sharpness and should appear no more grainy than the original. The essential requirements thus placed on the printing material are: sufficient latitude to reproduce correctly the greatest scale of tones likely to be met with in an original negative; extremely high resolving power; and fine grain. To these must be added the practical requirement of sufficient speed for contact printing. It may be said that no one emulsion excels in all of these characteristics. If an emulsion has the finest possible grain it cannot also possess the greatest latitude obtainable, combined with the maximum speed, and so on.

Each type of emulsion is made for a particular purpose and consequently has the qualities most essential for that purpose, even at the expense of other desirable, but less important, qualities. Motion picture negative film is especially designed for use in the camera. It has high speed to permit taking pictures when the light is not brilliant, great latitude to cover errors in exposure, and a medium value for its maximum contrast. It also has sufficiently high resolving power and fine grain to serve its intended purpose. Although it is an excellent negative material, it is not the best for making duplicates. Positive film, on the other hand, is intended for making prints for projection; it has latitude to cover the range of tones in a normal negative and the speed necessary for contact printing. It also has fine grain, high resolving power, and sufficiently high contrast to give good prints from flat negatives. The best duplicating material, however, should have even higher resolving power and a lower maximum

contrast. The reasons for this will now be considered.

A motion picture negative under the microscope is seen to be made up of black silver particles with clear interstices between. Whereas the function of the printing emulsion is to image these particles and interstices, no emulsion made has high enough resolving power to do so perfectly. The image of the granular structure always appears more ill-defined and coarse than the original, with the result that the picture, when enlarged on the projection screen, appears more grainy than the negative from which it was printed. The increase in graininess is not serious in positive prints from original negatives, but unfortunately it can become painfully evident in prints from duplicate negatives, because in the operation of making a master positive, then a negative from this, and finally a positive print, the grain structure is coarsened three times. It is essential then that if the graininess of the screen picture is to be kept at a minimum, the emulsion used in making both the master positive and the duplicate negative should have the highest possible resolving power.

It is desirable that a duplicating emulsion should not have a high maximum contrast, not only because high contrast is unnecessary, but because of development defects that occur when development is not carried to completion, as would be the case were a high contrast emulsion used for duplicating.

The defects produced with low development are termed the "Eberhard" effect and the "Mackie" line. Eberhard, a Danish astronomer, showed that the density of small exposed areas in a film differed from that of large areas which had received the same exposure, and that the inequality was greatest when development was incomplete. He found that under these conditions a small exposed area surrounded by an area of less exposure developed up denser than it should, while small areas surrounded by areas having greater exposure developed up with less density than they should. The explanation of the phenomena is simple. In the first case, the developer acting on the small exposed area diffuses into the surrounding gelatin as it becomes exhausted, and fresh developer diffuses into the spot from all sides, thus accelerating development. In the other case, when the small area has had less exposure than its environment, the opposite conditions hold, development of the small area being actually restrained by the reaction products diffusing into it from all sides. If development is stopped at an early stage, the defect is quite pronounced. If, however, development is continued until the image has reached maximum contrast, fresh developer has time to soak into the film from the outside and the irregularity is smoothed out.

The "Mackie" line has a similar explanation to the "Eberhard" effect and is really a manifestation of the latter on a scale that is easily discernible in the projected picture as a sort of halo surrounding the images of dark objects against light toned backgrounds.

It is particularly desirable to avoid these defects in the duplicating process because, like graininess, they are cumulative, and they are largely responsible for the "duped" appearance of prints made from duplicate motion picture negatives prepared on a high contrast emulsion.

Attempts were made in the Eastman laboratories to find a developer or developing conditions that would permit development to a low degree of contrast without producing the defects, but with no success. Apparently, the only way to eliminate the fault is to use an emulsion which when nearly fully developed will give the contrast or gamma required.

Inasmuch as motion picture negative and positive

films do not completely satisfy the rigorous demands made on a duplicating material, efforts were made to produce something more suitable. It was found that the characteristics of an emulsion are greatly changed if a dye, that absorbs the wave-lengths of light to which the emulsion is sensitive, is mixed with the gelatin. In the case of an ordinary emulsion certain yellow dyes have this property. The addition of the dyes has the effect of increasing the resolving power by reducing irradiation or scatter, greatly extending the latitude, and lowering the maximum contrast of the emulsion. By so "doctoring" a fine grained emulsion, a film was produced which possessed in a marked degree every desired property with the possible exception of speed. The speed, unfortunately, is rather low, being only about one-twentieth that of regular positive film. However, by using a suitable condenser system, sufficient illumination to print from dense negatives at the usual step printer rate can easily be obtained. It is practicable also to do projection printing with condenser illumination.

The dye used is a water soluble yellow that washes out during the processing operations and leaves a normal appearing black and white film. The emulsion keeps extremely well and can be handled in the usual positive safelight.

The use of this film, known as "Eastman Duplicating Film," for both master positive and duplicate negative, insures excellent tone reproduction, freedom from development defects, and a minimum of graininess.

The first step in the actual process of making the duplicate is the timing of the original negative for printing. The exposure for each scene should be such as to clearly record the details in the highlights. The exposure should not be much greater, however, than that necessary to secure the lightest detail; otherwise, the graininess of the final print will be accentuated. After the original has been timed, it should be carefully cleaned to remove all traces of dirt from any scratches that may be present on the gelatin or support. Chamois skin moistened with carbon tetrachloride may be used for the purpose.

If the master positive and duplicate negative are to be printed by contact, great care must be taken to insure close and uniform contact of the films at the printing aperture; otherwise, the advantages of the high resolution emulsion will be lost. It is obvious enough that poor definition will result if the films are out of contact during printing, but it is not so obvious that lack of uniformity in contact can do any particular harm. If the two films are not in close contact over the whole picture area, a patchy image is produced which on projection resembles uneven development. To test a printer for uniformity of contact, a print should be made from a strip of evenly fogged and developed negative film. If the printer is in perfect adjustment, the print will show an even tint, while imperfect adjustment will give the patchiness referred to. The best type of printer has a curved track and pressure plate. The radius of curvature should be small, about $1\frac{1}{2}$ inches, and the pressure plate should be undercut over the picture area so that it presses only on the sides of the film over the perforations.

When projection printing is resorted to for printing either the master positive or the duplicate negative, the lens chosen should be one designed to work at unit magnification. Ordinary camera lenses do not give their best definition under this condition, because they are designed to focus sharply objects at a distance. Clearly, the focusing of the printer lens must be very critical if the sharpness of the original negative is to be attained. It is important to keep the lens clean, since

the slightest finger mark or film of dirt on the lens will scatter the light rays and distort the tone reproduction.

For developing both the master positive and the duplicate negative a good form of continuous machine is best. Next to this comes development on a reel. The spacing of the supports on the reel should be close, so that the film will lie in a smooth spiral. Wide spacing of the supports gives uneven development.

If tank development must be used, the rack should be lifted completely out of the developer once every minute so as to prevent rack marks.

The developer recommended is:

Elon	4 g	31 gr.
Hydroquinone	1 g	8 gr.
Sodium sulphite, dry	75 g	576 gr.
Sodium carbonate, dry	25 g	192 gr.
Potassium bromide	1.5 g	11½ gr.
Water to	1000 ccm	16 oz.

With unused fresh developer at a temperature of 68° to 70° F., the effective maximum of contrast ought to be attained in about 4 minutes. Development beyond that required to give maximum contrast must not be given or increased graininess will result.

The master positive development, if correct, will give a print somewhat softer than one intended for projection. It will also, of course, differ from the latter in having a slight veiling over the highlights.

The usual acid hardener fixing bath may be used for fixing, although the hardener tends to set the dye and retard its washing out of the film. Sufficient washing should be given to clear the film, since a very little yellow dye will cut down the printing light and make timing more difficult.

If it is desired to make a duplicate negative that can be printed without light changes, the timing of the master positive must, of course, be accurate. By projecting the master positive, one can readily determine which scenes need more or less printing light than the average, and with a little experience the light change required can be estimated quite closely. The "key" light can be ascertained in the usual way by printing and developing a test strip. The scene chosen for the test should be of the most contrasty subject; that is, the scene with the darkest shadows, and the printing exposure should be sufficient to give a veiling over the deepest shadows. If this precaution be taken, all of the other scenes will automatically be taken care of, and the tone reproduction of the entire length will be satisfactory.

In order to learn if the duplicate negative will require a longer or shorter development than that given to the master positive, superimpose one of the scenes in the master positive on the corresponding scene in the original negative. If the registered positive and negative images exactly obliterate each other, then the duplicate negative should be given the same development as the master positive received. A faint residual negative indicates that a somewhat longer development must be given to the duplicate negative; if, on the other hand, a faint positive image be seen, the negative should be developed for a shorter time than that given to the master positive.

If the various steps in the preparation of the duplicate negative are carried out correctly, it will stand the test of direct comparison with the original under a low power magnifier. Examination under a higher power lens, however, will probably show some loss in definition and an appreciable increase in graininess. The definition loss arises, for the greater part, from poor contact in the printer. Too much emphasis cannot be laid on the necessity for intimate and uniform adjustment at the printing aperture.

Some increase in graininess over the original negative appears to be inevitable, but that obtainable on the Eastman Duplicating emulsion is, as has been stated, considerably less than is given by any of the regular emulsions. To keep the graininess of the final prints at a minimum, the prints should be kept as soft as is consistent with good projection quality.

In the foregoing procedure it has been assumed that any modifications required in contrast would be secured in the usual way by slightly varying the amount of development. The Eastman Duplicating Film, however, has a unique property not mentioned hitherto which can be made use of in practical work. The contrast or gamma of the image can be varied within wide limits merely by altering the color of the printing light; in other words, a contrasty, medium, or soft master positive can be made at will with the same amount of development. A yellow filter placed between the printing light and the film will give a high contrast image, white light will give a medium contrast, while a deep violet filter will give a low contrast. By taking advantage of this fact it becomes quite practicable to print onto the same length of film from contrasty and soft negatives and to compensate for the variation in negative quality by printing through suitable filters. In practice it is found that three violet filters of different dye densities will give the range of control necessary on average commercial work.

A precaution not to be overlooked is that the printing light should always be run at a standard voltage because of the color change that occurs with voltage changes. If the brightness of the printing light is changed by a rheostat from scene to scene, the scenes printed at low voltage will tend to be of higher contrast than those printed at high voltage. This is true whether or not filters are used. It is advisable to run the lamp at constant voltage and to use the diaphragm method of changing brightness.

In conclusion, it may also be pointed out that the highest grade of work on the new emulsion is produced when advantage is taken of its contrast control property, because this permits of complete development for every scene with the consequent avoidance of all development irregularities.

Rochester, N. Y., October 1, 1926.



Nature and Wild Life

A. BROOKER KLUGH, M. A., PH.D.

NATURE PHOTOGRAPHY IN FEBRUARY. — Work afield is decidedly restricted in February — the weather is, quite frequently, at its worst and the nature photographer is quite likely to have already about exhausted the possibilities of the rather small number of winter subjects.

But February is not therefore altogether a "lost month" for the nature photographer. There are, if the past season has been productive of a large number of negatives, still prints, enlargements, and lantern slides to make. I know that as far as I am concerned the latter job is one that is always with me, I never get caught up with it. It appears to be a job to which one applies the



TADPOLES OF THE WOOD FROG

A. BROOKER KLUGH

motto "Never do today what you can put off till tomorrow," and put off it is until the urge comes in the form of a request to lecture upon a particular phase of natural history, when the recent acquisitions in that special field have to be put on slides, matted, bound up and "thumb-spotted," with all possible celerity.

Speaking of slides, the man who said "There is no better way of showing the quality of a good negative than by means of a good lantern slide" spoke very truly. There are probably several reasons for this, but I am inclined to think that the chief ones are, firstly, that the picture, when thrown on the screen, is large enough to be effective, and, secondly, that the range of tones in a projected image is greater than it is in the case of a print. This latter characteristic makes for the "juiciness" of the shadows which is so highly valued as a pictorial asset.

The advantage which the magnified projected image possesses over the small or medium-sized print was brought out in an interesting manner at one of my recent lectures. An artist, who was not especially interested in nature photography as such, remarked that though he had previously seen prints from these same negatives he had never appreciated the pictorial quality — the grouping, the balance, the "patterning" — of the subjects before.

The nature photographer who has never tried any little lantern "shows" of his pictures will be rather sur-

prised to find what a wide appeal they make, and how many people who are neither naturalists nor photographers appreciate his work. And in doing this he is not only entertaining people, but there is always the possibility that he will arouse, in some members of his audience, sufficient interest to lead them to take up nature photography, in which case he will have conferred a very real benefit upon them by having introduced them to a most fascinating and enduring form of recreation. I find, in fact, that there are very few lectures in which I get away from the platform without somebody coming up to ask questions as to the ways and means of wild life photography.

Not infrequently letters, asking for information concerning the apparatus and methods of nature photography, follow a lecture, and to these I am always glad to reply as fully as my time permits and to refer the writers for further information to these columns. There is another type of letter which sometimes follows a lecture, and that is a request for the loan of the slides used. This I regard as a piece of unmitigated cheek, and either tell the writers so — in as polite a way as possible — or, more frequently, consign the epistle to the W. P. B. If these individuals would reflect for a moment, they would perhaps realize what colossal nerve and bad taste they were displaying, and that of this they stand convicted on three counts. Count one: they are trying to "steal another man's thunder," a heinous offence,



CHIPMUNK

RALPH E. DELURY

recognized as such since the time of the ancient Greeks. Count two: they are asking him to run the danger of the breakage of his slides in transit. Count three: they are asking him to take the trouble of packing up his slides, and of unpacking them on their return.

If any reader of this department should think of putting on a lantern lecture, and if he has never done so before, there are one or two cautionary remarks I would make. Always investigate the lantern before the lecture, and find out how long a slide may be left in it without over-heating, for there is nothing more distressing than to see, in the middle of one's remarks, the image deliquesce and "run up the screen." There *should* be a law — with severe penalties attached for non-observance — requiring every lantern to be equipped with a water-cell of sufficient thickness to absorb all the heat rays, which add nothing to the visual efficiency of the lantern and do nothing but melt slides, but unfortunately there is no such law and not one lantern in a hundred is so equipped. Have a talk with your lanternist; show him the way the slides are arranged, point out to him that they are all "thumb-marked" and arranged so as to come out up-side-down and "enantiomorphically," which is the scientific way of saying "right for left handedness," so that they will come out on the screen right side up and right way round. When some slides come on the screen upside-down, or wrong way round, it is sometimes the lanternist's fault — and he, fortunately for the lecturer, gets the blame, and the laughs, of the audience, anyway — and sometimes the lecturer's fault. If the lecturer has not arranged his slides properly it is his fault, and if the lanternist undertakes to use his own judgment with regard to a properly arranged set of slides, then it is his fault. I recall one lanternist, who, I was informed, regarded himself as an expert, and yet who ran my whole series of slides — which were duly thumb-marked — "right for left." Fortunately they were all subjects, — flowers and animals — in which this did not matter to the audience, though it is always a little disconcerting to the lecturer to see everything come up wrong end to. If there is printing on the slides, then it is obviously necessary to have the slides placed correctly in the carrier. I once witnessed one rather ludicrous example of a lapse in this respect. The slide was one showing columns of

names and figures. First the slide came on with the words running backwards. The lecturer remarked, "Would you mind turning that slide round?" The lanternist did so, and it came on again — upside-down. The audience sniggered. He changed it again — it was "right for left," and again he hurriedly changed it — and it was on its side. The audience laughed. He next got it upside-down again, and then, once again, wrong way round. By this time the lecturer showed beads of perspiration and I have no doubt but that, if we could have seen him, the lanternist was in an even worse condition. The next shot was a lucky one — the slide was right-side-up and right way round, and everybody breathed a sigh of relief.

If possible it is a very good plan to have a slide or two thrown on the screen some time before the beginning of the lecture. It is really the job of the lanternist — or of some officer of the organization under whose auspices the lecture is being given — to see that the light, the projection distance, and the other factors, are all satisfactory, but not infrequently there is negligence in this respect and a preliminary trial may save the lecturer much discomfort. This preliminary trial is much more necessary — in fact I should say it is absolutely necessary — in the case of color plates than in that of ordinary slides. Both Agfa plates and Lumière Autochromes are ever so much denser than ordinary slides, so much so, in fact, that I find most of the lanterns installed in lecture halls will not project them at all adequately. To project these color slides successfully requires a powerful light, an arc, preferably with large-size, hard-colored carbons, and of at least thirty amperes, and a short projection-distance. So great, indeed, is the difficulty of securing adequate illumination for these slides that I have made up my mind that in future I shall slightly overexpose all my Agfa plates, so as to get thinner slides, even though this procedure detracts from the brilliancy of coloration.

A hint with regard to hand-colored slides may not be out of place — if you cannot color them well, don't color them at all. This advice is given because of the horrible examples of hand-coloring which one so frequently sees — things with "over-run" margins and the colors all wrong. Good work in coloring slides is not difficult, if one has an adequate training in painting and



ROCKY MOUNTAIN SHEEP

F. A. RICE

will take the necessary pains to place the colors with exactitude, but as very usually done they are merely good photographs spoiled.

The nature photographer nearly always has a good many negatives which are very thin, through no fault of his own but because the movements of the subject did not permit of adequate exposures being given. These very thin negatives give most unsatisfactory results when printed on ordinary lantern slide plates, but it will be found that they are quite satisfactory if slides coated with "gas-light" emulsions — such, for instance, as the Wellington S. C. P. or the Imperial Gas-Light Lantern plates — are used.

EQUIPMENT FOR NATURE PHOTOGRAPHY. — I have at hand requests from several readers of this department for information concerning equipment for nature photography. One request is extremely specific, as the writer wishes to know what equipment — cameras, lenses, screens, plates, etc. — I use myself, and suggests that others might be interested in information on this point. I am very glad to accede to this request, but in doing so I wish to make it quite plain that I do not regard the particular makes of apparatus as the only ones which are suitable for nature photography. My present equipment is the result of some years of selection of apparatus for nature photography — it certainly does the work and does it efficiently — but there are undoubtedly other instruments, and materials, of similar type which would do it just as well.

In dealing with my equipment I shall mention the particular features which I consider render each piece of apparatus, or each kind of material, particularly suitable for nature photography, as with these points before him the prospective purchaser can decide in how far any particular instrument he has in mind fulfills the requirements.

The camera with which I do most of my nature photography, which has served me faithfully since 1914, and which is still in perfect condition, is a Goerz Taronax, $3\frac{1}{4} \times 4\frac{1}{4}$, with an $f:6.8$ Tenastigmat lens and a Compound shutter.

The main points about this instrument which make it suitable for nature photography are:

It is a plate camera, so that accurate focusing on the ground glass is the method of operation, and this is, in most work in nature photography, absolutely essential.

It is a double-extension camera, so that "life-size" images may be obtained. This is a very essential feature, especially in the photography of small objects, such as insects.

It is built of aluminum, which gives its body a compactness and durability which is not obtainable in wooden construction. The value of metal construction was very clearly brought out one day when the wind blew the camera over and brought it down on some rocks with a crash which would have smashed up any wooden camera, whereas the total damage was a very slight burr on one corner of the front-board.

It has a Compound shutter, which gives speeds of varying duration from 1 second to $1/250$ second, and includes such speeds as $1/10$ th and $1/15$ th second, which are very useful to the nature photographer. The newer Compur shutter — which is a modification of the Compound — is equally efficient. Both these shutters seem to retain their efficiency indefinitely and to operate well under all climatic conditions.

The working aperture of the lens — $f:6.8$ — is sufficient for all except high speed work, and for this work a camera of this type is not suitable. A friend of mine who is interested in nature work, in getting a camera, insisted on an $f:4.5$ lens on a camera of this type, in spite of my warning that it involved a needless expense, and he has never yet used it at full aperture, while, as a matter of fact, most of his pictures are taken at $f:11$ and $f:16$. The fact is that practically all the nature subjects which are taken with this type of camera require stopping down to $f:8$ or less, to give the requisite depth of field. At the same time there are occasions on which the full aperture of $f:6.8$ can be employed with benefit, and these are the occasions on which an $f:8$ rectilinear would "fall down."

The other camera I use in nature photography is a Thornton-Pickard Duplex Reflex, $2\frac{1}{2} \times 3\frac{1}{2}$, with a



ADDER'S MOUTH (*Microstylis Monophyllos*)

CHARLES MACNAMARA

Ross Teleross f:5.6 lens. This camera I use only for "high speed" work, such as the photography of birds in flight, or for the "stalking" of mammals.

The advantages, in fact the necessity, of a camera of the reflex type for this kind of work are obvious. One never knows when, or in what particular location, the animal one is photographing will assume the desired pose, or engage in the particular activities which one wishes to portray. Consequently the ability to focus on the ground-glass until the moment of exposure is a necessity.

The main features, aside from its "reflex" characteristics, which render this instrument suitable for nature photography, are:

It has a focal-plane shutter which can, by one motion, be set for any speed from 1/10 to 1/1000 second.

It has a stop on the shutter-control which enables one to give a certain exposure again and again without looking at the shutter.

It has double extension, so that one can obtain life-size images.

It has a "quick-change" arrangement for the plate-holders.

The shutter is "self-capping" so that one can make changes of shutter-speed without inserting the slide in the plate-holder.

It has a light-tight reversible back, so that one can change from the horizontal to the vertical position of the plate without inserting the slide.

The lens is a 2-times telephoto, which enables one to obtain pictures of birds and mammals which could not be approached closely enough to get images of useful size with lens of ordinary focal length.

There is a modification which I have introduced on this instrument which I find of the greatest utility. To the ring on the outside of the lens barrel which

controls the iris diaphragm I have had two narrow bars of metal fastened in such a way that they are on opposite sides of the barrel and project well forward. By means of these bars, when operated by the left hand, the diaphragm can be set to any stop without turning the camera round and looking at the lens, because marks on the barrel, when covered by the upper bar, show the stop when one looks downward. As a matter of fact I find that, by reason of considerable practice, I can set the iris to any desired stop — with quite sufficient accuracy — without looking at the lens barrel at all, so that I do not need to take my eyes from the focusing-screen.

The selection of the $2\frac{1}{2} \times 3\frac{1}{2}$ size was made because a reflex is a bulky and heavy type of camera, so that the smaller sizes, which minimize these undesirable characteristics, are decidedly preferable, and I have had no reason to regret my choice.

So much for the cameras. I have also a $2\frac{1}{4}$ square Icarette with which I occasionally take some nature pictures, some of them quite fair, but most of them "lost chances" because I did not have a machine more suitable for nature photography along.

I use three tripods. One is a Contessa flat-folding metal telescopic tripod, fitted with a ball and socket head of a type which is not, as far as I know, now obtainable. This was, until recently, my chief tripod, but has now been displaced by an Adam's (London) "Zephyr" No. 8 tripod. This is an aluminum, telescopic tripod, with triangular legs which thus fold into a slim cylinder, and which, when fully extended, is five feet in height. It is very light, very rigid, and, when fitted with the light Contessa ball-and-socket head, strikes me as being — from the experience of one season — the finest tripod obtainable for nature work. The third is an old wooden tripod which is used in situations where the legs must be placed in the water, — a proceeding which is fatal to the springs of telescopic tripods. I still keep the Contessa tripod with me, as I like to have a second one to fall back on in case of an accident to the one in use. I carry the telescopic tripods in leather cases which sling on the belt.

The advantages of metal telescopic tripods are that they are much less bulky than wooden ones, and that they can be used fully closed, thus giving the low viewpoint which is frequently necessary in order to obtain the best effect in the photography of low-growing plants, while any desired height can be attained by extending fewer or more of the seven sections. Ball-and-socket heads are essential in nature work, as any angle of view can be obtained without shifting the tripod legs about.

The filters which I use are — the Ilford Alpha (which is practically the same as the Wratten K1), the Ilford Gamma, a "full correction" filter for panchromatic plates, the Wratten "G," a deep yellow "contrast" filter, and the Wratten No. 22, a red filter. The first two, which are used a great deal, are mounted in glass, while the latter two are in the form of gelatine film. All are mounted in brass cells which screw into the front of the lens-mount of the Goerz. With the reflex I use only one brass cell, into which filters, of the same kinds as above, can be inserted as desired, because one does not do enough panchromatic work with a reflex to make it worth while to carry extra cells.

In conjunction with the above filters I use an Ilford "P-V Pan." filter, which when an object is viewed through it shows one how it will photograph on an "unscreened" panchromatic plate, so that the various filters can be used with the "P-V" and the exact effect which they will give can be noted.

The exposure meter I use is a Wynne, hunter-model,



OAK FERN

A. BROOKER KLUGH

which is certainly the lightest and most compact meter I have tried.

I use a changing-bag, made of three thicknesses of first-quality sateen, and on long trips this is carried, so that plates may be changed at any time and in any place, even in full sunshine.

The plates I am using at present are Wellington Spectrum Panchromatics, which combine speed and full panchromatic qualities, and, for high-speed work, Wellington Iso-Wellington, which have a speed of 700 H. & D. and are orthochromatic. I carry a few packages of Ilford Monarch, or of Imperial Excelsis, cut-film — both speed emulsions — merely as reserve material, for which purpose the lightness of cut film renders it very suitable.

This, then, is my list of equipment and materials for ordinary nature photography. I shall not now go into the matter of special equipment for high-power insect photography, for photo-micrography or, for underwater photography.

OUR ILLUSTRATIONS. — The picture of the Rocky Mountain Sheep, by F. A. Rice, is very good because it shows so well the type of country in which the animals were found, as well as showing several of the animals in various positions.

The photograph of the Chipmunk, by Ralph E. DeLury is not only a nice "close-up" of the head of this little animal, but it brings out one of the chief things in



HEPATICAS

CORNELIA CLARKE

regard to its habits, that the burrow has no mound of earth at its entrance.

The picture of the Hepaticas, by Cornelia Clarke, is good because the flowers stand out well against the background and the gradation on the petals is very well rendered.

The Adder's-mouth, *Microstylis monophyllos*, is another of Mr. Macnamara's excellent photographic studies of orchids, of which we have reproduced a number in the past.

The tadpoles of the Wood Frog were taken in a small aquarium, and show two stages in the development of the tadpoles of this species, the one behind showing the later stage in which the front legs have emerged.

The Oak Fern, *Phegopteris dryopteris*, is a delicate little fern with fine black wiry stems. In this picture the plants which grow with it — Oxalis and Violets — show beneath the pinnae and add to the effectiveness of the photograph, both pictorially and from the natural history standpoint.



The Cine Amateur

KARL A. BARLEBEN, JR., S. M. P. E.

WHAT MAKES THE "MOVIES" MOVE

Of the many thousands of amateur cine enthusiasts, I wonder how many have interested themselves in their hobby enough to delve into the mechanics and "mysteries" of cinematography. It is actually enough to know that when a button is pressed or a crank turned, pictures that "move" are the result, but the real amateur should be interested to know just what makes the pictures move — and why. Let us become technical for a few minutes and discuss the move of the movies. It is interesting enough, and it should be part of the knowledge of every cine amateur.

To begin with, it must be understood that motion pictures do not move, as many people still believe. Our motion picture is, to quote a well-known phrase, "an optical illusion based on the persistence of vision." This is the best and most concise description I have yet met, and for our purpose it will do. Going a little further, we find that a strip of motion picture film, when ready for projecting, consists of a row of snap-shots, taken one after another in rapid succession. Years ago it was discovered that sixteen pictures per second gave the most natural and life-like effect. To-day we expose sixteen pictures per second when normal action is desired, for this rate has been found to be the best so far. In production work sometimes more than sixteen pictures per second are exposed, and sometimes less, but that is another story and has no place here. We also have what are known as slow-motion pictures which, also, is another story, but now we are considering only normal speed. We know that just running a strip of film through the camera at a steady rate will not produce the desired effect. It is the fact that the film, on its journey before the lens, is stopped intermittently that give us "movies." It is interesting to note just what the mechanism is that produces this effect. It is called, as its function suggests, the intermittent movement. It is nothing more than a sprocket or set of

teeth driven by a cam or similar mechanism. There are several types of intermittent movements, classified roughly as the harmonic cam, maltese cross, drunken screw, and beater or dog movement. These are not all, but will give some idea of the different methods used to step film through the camera or projector. The harmonic is perhaps the most popular for cameras, for practically all of the better grade standard cameras are equipped with this movement. It is smooth and positive in action, and is quiet. There are other forms of this movement in use, but they all perform in a like manner. The maltese cross is rarely used in cameras, but is predominant in professional projectors. It is usually encased in an oil well, the pin and cross working in oil at all times. A sprocket is used with this movement over which the film is threaded. The harmonic usually uses pins that work in and out of the perforations in the film, drawing it down one frame at a time. The maltese cross, having four cross-arms, pulls down four pictures every revolution. This is why this movement is not so popular in cameras, for should there be any wear, it will be difficult to adjust it, for all the four steps would not synchronize. The harmonic cam, pulling but one picture down every time, can more easily be adjusted. The maltese cross, however, is the more rugged and solid movement, and is therefore used in projectors where it must work continuously, sometimes sixteen hours every day, in theater duty. The drunken screw is another form of eccentric movement, and is, like the beater movement, used in the cheaper grade of cameras. The beater movement is also used in toy projectors in Europe, but is not popular in this country. It is an arm that rotates, hitting the film once every revolution, thereby forcing the film down one frame at a time. It is crude, and not used in high grade machines.

Another element enters at this point. If a movement is provided for stopping the film intermittently, would this produce motion pictures? Not yet. The next important factor is a shutter. Practically every motion picture camera and projector employs a rotary shutter. Its function is to cut off the light during the time the film is in motion. When the intermittent movement allows the film to stop, the shutter is open to allow the exposure, and just before the movement again draws the film down, the shutter is closed during the time the film is in motion. The shutter and the intermittent movement must work in unison, or else the picture will be streaked. When this occurs, the shutter is said to be "out of time." Gears, of course, connect the shutter to the intermittent movement, thus ensuring to a certain degree accuracy in the functioning of both. It goes without saying that the amateur would better not tamper with these delicate mechanisms, but should allow the expert only to make any repairs that seem necessary. The usual opening of the camera shutter is 180 degrees, although some cameras are built so that a 220 degree opening can be used. The camera shutter consists of but one blade, while on projectors, two and often three blades are used. Only one of these blades does the actual work, as far as cutting the light off is concerned. This is called the "master-blade." The others are used only for equalizing the flicker of the master-blade on the screen. On the projectors, as on cameras, the shutters must synchronize with the intermittent movement. The adjustment often slips, and the modern projector has a convenient knob whereby the projectionist may reset the shutter without stopping the machine. Spiral gears are used for this purpose, and a "travel-ghost" need never be seen on the screen of a theater. "Travel ghost" is the term used to describe the streaks on the screen caused by the shutter being out of time. If the streaks run upward, the shutter is

timed too fast or far ahead, and if the streaks run downward, the shutter is too slow; in other words it cuts the light off after the film has been started in motion.

The intermittent movement is often referred to as the "heart of the camera or projector," and so it is, for without it, we could not have motion pictures as we know them. These movements are very delicate, whether in cameras or projectors, and are adjusted to minute fractions of inches. If they were not adjusted so finely, we would have pictures that would jump and sway from side to side, and in general be tiresome to the eyes. Some of the older readers will no doubt recall how the early motion pictures flickered and jumped. That was due to imperfect shutters and movements. Since then, improvements have been made to such an extent that motion pictures have not the slightest trace of flicker or movement.

FILM EDITING. — After the amateur has exposed his rolls of film, his work has just started, really. For there is editing to be done, titles to be made, etc. Nearly every roll will have to be edited to some extent, for there are bound to be bad places, blemishes, and the like. Even if the roll is perfect, photographically, the scenes will in most cases be wrong in sequence, necessitating changing them around to conform with the subject and idea the film is meant to suggest. For this purpose, a splicing outfit will be found almost a necessity, for while the sub-standard film can be patched by hand, this does not make as neat a job as does the splicer. Because of the small area the film offers in patching, great care must be exercised to see that the patches are even, smooth and straight. The splicing outfit does all this mechanically, and at the same time makes the patch so strong that it will not easily break apart.

For the 16 mm film there are two methods of splicing. One is to cut the film and splice it straight across, the other is to make a slanting joint, cutting along the frame-line of the film near the center. This form seems the most popular, as its upholders claim that this patch covers more surface of film and is therefore stronger. Whichever way the amateur chooses, he should adhere to in all his films. Editing the summer's crop of cinema activities makes an ideal winter sport, for it does not demand outside work nor daylight. A few minutes or hours spent in editing the film means a more complete and entertaining reel.

NEGATIVE, POSITIVE AND THE REVERSAL PROCESS. — With the introduction of the new film stocks for amateur use, many of the new-comers will find themselves more or less confused. Every cine amateur is familiar with the Eastman Kodak reversal film. He knows that all he has to do is to expose his roll of film and send it to Rochester to be "finished" and then returned to him. The new films are apt to be a trifle confusing at first, for now we have not only a reversible film, but also a negative and positive film. Just which process to use depends upon the individual and to the use to which the film is to be put. We will go into the two methods and see just what each has to offer.

As the reversal process is so well known, we need not go deeply into the subject, except to compare it occasionally with the new process. To start with, we find that for six dollars — possibly five by the time this article goes to press — we can expose a roll of film and use it at no further cost. The negative and positive method is a trifle more costly, naturally. But is it not worth it to those amateurs who feel that it is better to have at hand at all times a negative from which as many prints as are desired may be made? Also isn't it worth it to those amateurs who want their films to be uniform throughout the entire reel? On any subject

that is worth keeping, isn't it worth the extra few dollars to ensure having the film at all times? Certainly.

True, duplicates may be made from a reversed positive reel, but the results, while excellent at times, are not to be depended upon as a rule. The process is uncertain to a certain extent. There is nothing like having a negative always at hand which may be sent out on a moment's notice to be printed. This negative is never run through a projector, therefore it is not apt to become scratched or otherwise marred. I do not discourage the use of the reversal film, but I do wish to advise the amateur to discard it for subjects that are of importance to him. Records of family events, and other important happenings should always be made on a negative film and prints made therefrom. Also the amateur who desires to do his own finishing — we are coming to that soon — must take the negative and positive method, for the reversal process is difficult.

We come down to this: The reversal film is excellent — due to its low cost — for scenes that are not of any great importance, or scenes of which no duplicates are wanted. For such "shots" it is ideal. But for serious work, important work, and subjects where more than one print is desired, nothing can beat the negative and positive method, even though it costs a bit more. Another item to be considered in connection with the new process — not new really, but new to amateur film users — is the finishing. In time we shall no doubt have at our disposal small developing and printing outfits for home use. If the amateur does not feel as though he should or could do this work himself, he is assured of having fast service from the professional laboratory, for there will without doubt be one in his home town or city. This will mean a service of perhaps twenty-four or forty-eight hours, and I have noticed that the amateur is ever in a hurry to receive his finished films. Some will even be glad to pay the extra cost of the new process just in order to get their films back in shorter time. Of course the professional must use the negative and positive method, for as a rule more than one print is required, and besides this process smacks more of the professional ways.

It would not do to eliminate one process and substitute another, especially in this case, for with the two, as it now stands, everybody can be satisfied. There will be those who will "shoot" entirely on reversal film — and stick to it. Then again there will be those who will use nothing but negative film in their cameras. Still again there will be those who will use each type of film according to the subject they want, and the use they expect to put it to. We cannot say that one way is better than another. Each has its particular advantages and disadvantages. The amateur must consider before he starts "shooting" just which film will be best suited for his particular type of work, and then use that kind. Personally I have use for both types of film, for I can see where one would suit my purpose better than the other at different times.

It is interesting to note the rapid strides that have been made by amateur cinematography in the last few years. Already we have trick devices, fool-proof equipment and now two processes of film handling. And yet we are not finished. I believe that even more remarkable results will be shown from year to year.

PRICES ON 16 MM DEVELOPING AND PRINTING. — We have received from a New York firm a price list for developing and printing 16 mm film. It is as follows: 16 mm contact, 6c. per foot; 16 mm reduction printing, 3c. per foot (of negative); negative titles, 20c. per foot; and 16 mm negative developing, 2c. per foot. A 24 hour service is furnished on reasonable quan-

tities of this work, after receipt of order and negative. In other words, the order remains no longer than 24 hours in the laboratory. Prints can be tinted or toned the same as standard prints. So far (at this writing) nothing but amber positive film is obtainable. Other colored bases may appear soon, however.

This company also builds 16 mm contact printers, reduction printers and enlarging printers, the latter being made up only on order. It agrees that the introduction of negative and positive film in the 16 mm size opens new and wider fields for the amateur as well as the professional. With this in mind, it is now prepared to handle all kinds of work in the 16 mm line.

HISTORY IN MOTION. — The government is building new vaults of steel for the storage of all motion picture film that might prove useful or interesting to future generations. The news-reel companies as well as the production studios are searching through their negatives for all historical matter. The news-reel companies, especially, have miles and miles of film of great value. These films will be stored away for the use of future generations, and it does not take much imagination to visualize how these films will be received in the years to come. The Eastman Kodak Company has invented a new process by which film may be preserved indefinitely. This, of course, is of prime importance, and all films deemed worthy of saving will be processed by this company.

The news-reels have unearthed pictures of McKinley, these being perhaps the first reel news-reel pictures ever made. Then there are many feet of Theodore Roosevelt, Wilson and other important personalities in the affairs of the government. There are many feet — running into thousands — of actual war pictures, which have never been released. These, too, are to be kept for posterity. We of this age, perhaps, do not grasp the importance of these pictures now, but far-seeing individuals firmly believe that these pictures will be of great importance to future generations. Especially where motion pictures are beginning to play a part in education even now, it is not difficult to realize that in the years to come these very pictures may be a part of every school lesson.

SOMETHING NEW FOR THE AMATEUR. — As is to be expected in this new field of amateur cinematography, many new ideas, plans and equipments present themselves to the public. The latest in cine equipment for the amateur is a camera, new in design as well as execution. The publishers of this magazine have just received a descriptive catalog of the Monos camera, made in Genoa. This is the first camera brought to my attention made in Europe, though many others are on the market over there.

The outstanding feature of this camera is the fact that it is not limited to any one size of film. According to the catalogue, the following sizes of film may be used with equal results: standard 35 mm, Cine Kodak 16 mm, Pathe Rural 17½ mm and several other apparently foreign "off-standard sizes" of which the American amateur knows nothing, as yet. This is indeed an extraordinary camera, for with it the amateur may use several sizes of film, in other words he is not limited to any one particular size, as is the case with all other cine cameras.

The camera is made of metal throughout, and measures 2 x 5 x 5½ inches. It may be operated by hand, a crank being furnished for this purpose, or it may be run automatically by a motor or elastic transmission. The regular exposure of sixteen pictures per second is obtained by turning the crank two revolutions per

second, as is common with our American cameras. A footage meter is placed on the camera where it may easily be seen. This records in meters instead of feet, but it is a simple matter to figure the scale in feet if necessary. There is a choice in lens equipment. Either the regular *f*:3.5 or the *f*:5 may be had, both having a focal length of one inch. They are of the fixed focus type and need no adjusting. Daylight loading is another feature of this camera, film retorts or magazines being used for this purpose. In appearance, the Monos camera is similar to a big Pathe camera, it having the same exterior shape. These cameras will no doubt be placed on the American market, and I believe that they will become more or less popular on account of their flexibility in using different sizes of film.

A CINE ASSOCIATION FOR AMATEUR CINEMATOGRAPHERS. — No doubt some of my readers have by now received a circular from the Amateur Cinema League. For those who do not already know of this League, I will give a few words here. The League was organized by Hiram Percy Maxim, who also organized the Radio League. Everyone knows the success the Amateur Radio League met with, and there is no doubt in my mind but what Mr. Maxim will duplicate his success in amateur cinematography. The Amateur Cinema League offers many things, among which are exchange of films, intelligent information and a magazine for the members called "Amateur Movie Makers." I have had the privilege of examining the advance copy of the first issue, and I have nothing but praise for its make-up. It is the first magazine to devote its entire contents to the amateur cinematographer.

The League has no commercial ideas whatsoever, and it does not recommend any one particular type or brand of equipment. It is an organization for the amateur, to boost the hobby of cinematography and show the amateur how he may get the most out of his equipment. The membership dues are within the reach of everyone who can afford cine equipment, \$5.00 per year. The cine amateur will do well to investigate the possibilities of this League.

FLAGPOLES AND HEADACHES. — One of my correspondents, Mr. Fred M. Harrison sends in the following amusing incident: During the dedication exercises and unveiling of the memorial flag pole in Central Park, a young man broke through the "firing lines" with his Filmo ready for action. Standing about three feet from the pole, he began to shoot from the base all the way to the top of the pole. His twenty-five foot shot ought to produce a striking effect on the screen, maybe a headache, too, in the bargain.

PASTOR MAKES MOVIES. — For several months newspaper men on big stories have noticed an unobtrusive little man, in clerical garb, armed with one of these new-fangled, pocket-edition movie cameras. He carefully avoided making it difficult for newspaper camera men to get their pictures, but always managed to make some satisfactory shots himself.

A few days ago, while a crowd of reporters on Pier A were awaiting the arrival of the steamer Macom with Mrs. Mille Gade Corson, the little man turned up and took a place on the stringpiece out of everyone's way. Leaving the pier afterwards, he explained to the writer, in English faintly touched by a French accent, that he is pastor of the Belgian Church of St. Albert, on West 47th Street. He has been making pictures since spring, and next winter, when the time arrives for in-

door entertainments, he will put on a novel show for his congregation in the form of a homemade news-reel.

Among the events recorded by his camera are the arrival of Cardinal Bonzano and the delegates to the Eucharistic Congress, the Congress itself, the city's welcome to Gertrude Ederle and Mrs. Corson, Rudolph Valentino in life, and the Valentino funeral. — From a newspaper clipping sent in by Fred M. Harrison of the Personal Motion Picture Service, New York City. Date and name of paper unknown.

HOMEMADE MOVIES IN UNION CHURCH. — An interesting experiment in "homemade movies" was tried out recently at Union Church, Columbus Avenue and West Newton Street, when motion pictures made by young people of the church were exhibited in the vestry before a large audience.

The film, "Excuse Me," was made last July in West Yarmouth, when the members of the cast drove down to the Summer resort to film the story written by Gladys Ruth Bridgham.

Following the idea of the George Beban pictures, the film did not conclude the story, but stopped half way through the plot. Then the curtain was lifted and the same persons who took part in the picture were shown on the stage in the same costumes, ready to finish the story in person.

The cast included Stanton Becker, Rena Mercer, Allan Hinxman, Janet Kilpatrick, Ralph Shepherd, Paul Winters, Dorothy Shooshan, Ellen Franks, Louise Franks, Katharine Pond, Alice Randall, Lillie Aldrich and Margaret Becker.

Before the film was shown there was a short program of educational films and banjo solos by Hugo Okonogi.

Tower Inn Orchestra, which came from the Tower Inn where the scenes of the film "Excuse Me" were made, played for dancing.

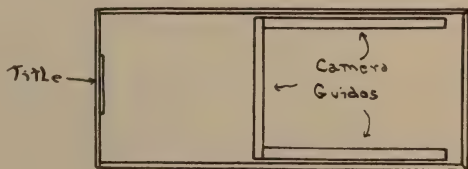
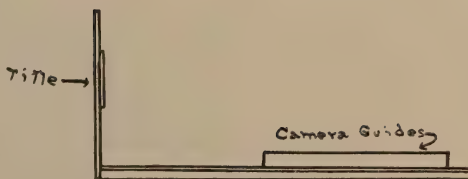
The entire film was made by the young people of the church, who wrote the sub-titles, cut and assembled the film and made it ready to be shown last night. — *Boston Globe*.

THOSE CUE SHEETS. — The Famous Players Lasky Corp. issue projectionist cue sheets with every feature picture. These are printed for the convenience of the projectionist in making his "pick ups" from one machine to another during the presentation of the picture. Sometimes amusing sentences are found in these cue sheets, the following being a sample.

The cue sheet for the production "The Ace of Cads," featuring Adolph Menjou, contains the following: End of part one: Last scene on reel: Lieutenant de Gramercy facing EACH OTHER. End of part seven: Last scene on reel: Close-up of Maturin, holding Elinor around waist and kisses her 68 feet from end.

Of course there are mistakes caused by being too brief, but to the casual observer they are indeed humorous.

THE FILM MARKET. — Last month I asked those interested in either buying or making for sale 16 mm pictures to write to this department. As these pages are "made up" at least a month before publication, and sometimes two months, I have not had the opportunity to record all the communications this month. I have, however, several subjects ready for distribution, and they are as follows: 20 odd 100 foot reels of the city of Chicago, Ill., horse racing, polo, football and several scenics, such as waterfalls and the White Mountains in New Hampshire. Anyone interested in obtaining any of the above subjects should write to this department, and the address of the maker of the subject will be sent, provided return postage is enclosed. On the other hand, if you want some particular subject, write

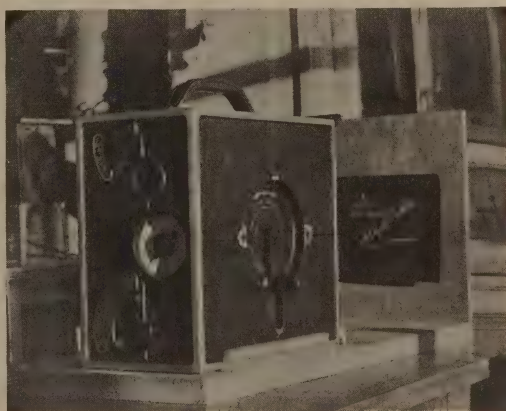


Dimensions vary with type camera used

in and we will be glad to try to find such film for you. This might be termed a "two way service." Let me repeat that this is in no way a commercial proposition; we merely wish to aid the amateur in securing films of subjects that interest him the most.

A FEW PRACTICAL HINTS FOR THE AMATEUR CINEMATOGRAPHER. — Perhaps one of the most perplexing problems to the amateur motion picture photographer, whether he employs 35 mm, 16 mm, or 9 mm film, aside from that of correct exposure, is that of trying to make his or her film of real professional quality. It goes without saying that the beginner cannot expect to turn out 95 feet of perfect film from every hundred, and it is not to those I am writing this article, but rather for that large majority of real honest-to-goodness amateurs who have mastered the basic principles of photography and are turning their attention to the making of pictures of real theatrical atmosphere and quality.

In cinematography as in still photography, one of the greatest faults is that of careless, haphazard "shooting." Whenever anything presents itself, be it a tumbling water-fall, or a child at play, if it appeals at the moment to the mind of the person in question, he immediately begins to reel off film on it, and in consequence his films, if interesting at all are only passingly so, and are just a mere jumble of unconnected events — just hash. One



of the first things for a real amateur to do if he suddenly finds himself victim of such a malady is to discontinue such practice *at once*. Haphazard shots like that are not only extremely crude in appearance, but soon form a very expensive habit. Furthermore it will in no way increase the amateur's knowledge or ability. A film should never, except under the most unusual and extreme circumstances, be taken without first having been thoroughly planned and thought out and if possible rehearsed. Another rule which has been stated time and time again but seems to have been accepted by comparatively few is *do not panoram!* Hold the camera still and except for special occasions or for a special effect, *never* try and follow a moving object, such practice being very tiring and disconcerting to the eye when viewed on the screen and *extremely* amateurish.

The matter of titles is one which deserves note. Titles are to a motion picture what the dessert is to the dinner, and sad to say, few are the amateurs who use them. They complain that titles eat up footage, and that they cannot go to the expense of purchasing a title outfit. Titles do consume film, but it is much preferable to insert a good interesting title in place of a poorly done commonplace scene. As for the title outfit, it was the expense of this necessary adjunct that nearly persuaded the author to go without, but realizing their importance and being determined, I decided to build one. A glance at the figure will convey the general idea. The actual measurements will vary with the type of camera employed, mine being a Cine-Kodak Model-A (hand-drive) with $f:3.5$ lens. I found by experiment that by taking the front combination from my Graflex lens and placing it over the front of my camera lens, objects at a distance of 9" would be in exact focus, and also that the field of vision covered was about 3" x 5". The problem then dissolved itself into the making of an affair which would hold the camera firmly at a fixed distance of 9" from the upright at the other end of the board which was to receive the title cards. That completed I went to a local photographer's shop and purchased a small album, about 4" x 6", for \$.25. Next I tore out the black leaves and neatly printed my title captions in a 3" x 5" rectangle. After placing same in the field of vision of the camera they were photographed in the usual manner out of doors in the shade, allowing $1\frac{1}{2}$ turns of the crank per word. The results from this method have proven to be extremely gratifying and are really professional in appearance.

A very common and effective device employed to considerable extent in professional production is the vignette. But owing to the expense of such a device, it is rarely if ever seen in amateur productions. The author employs a simple device on his camera which produces splendid results of this sort and yet is negligible in cost. The only article that need be purchased is an adjustable filter holder that will fit over the lens opening in the front of the camera. Next, procure several pieces of cut film (which is to be distinguished from roll-film or film-pack), expose one and develop it to a light grey, and remove the emulsion from the others. Cut several circular disks to fit the filter holder. Now find the exact center of each disk and cut a small hole with scissors or a sharp-pointed instrument so that each will have a diameter of about $\frac{1}{4}$ ". The one which has been made of exposed film has now been completed. Take the others and with a straight-edge and sharp-pointed instrument, score a series of parallel lines across the face of each, lines to be about $1/16$ " apart. Now score another set at right angles to the first so that the entire surface is laid off in little squares. Now place one of the ruled disks in the holder and over the lens and photograph a scene in the usual

manner without any exposure compensation. The result will be sharp in the center with gradually increasing fuzziness to the edges, and is capable of producing some beautiful effects. If the exposed disk be used, the scene will appear circular in the center of the screen, with the corners lost in darkness. The dimensions of the hole in the disks will vary with the camera used and the best results will be obtained with a little experiment. This matter of "effects" opens up a new and very interesting field for the amateur and it is hoped that some even better ideas may soon be brought to light. — RALPH C. WILKES.

CINE QUESTIONS AND ANSWERS

Question: I have heard something about a new standard film made by Pathe. Can you give me its dimensions? *Answer:* You no doubt refer to the Pathe-Rural stock. It is $17\frac{1}{2}$ mm wide, and has its sprocket-holes along the edge of the film, as in standard and 16 mm film. The holes are exactly opposite the frame line, just as in 16 mm film. The actual size of this film is $9\frac{1}{2}$ x $13\frac{1}{2}$ mm, the projector-gate limiting this to 9 x 13 mm. This film differs from 16 mm film in that 500 feet equal 1,000 feet of standard film (16 mm film as you know, needs but 400 feet to equal 1,000 feet of standard in picture-time).

Question: Is there a 16 mm film measuring machine on the market? *Answer:* To my knowledge at the present writing there is no measuring machine on the market for the amateur. You might write to the Duplex Co. for further information about this.

Question: Could you tell me where I could obtain several stories written expressly for amateur motion picture production work? *Answer:* Jack Bechdolt in his book "How to Make Your Own Motion Picture Plays" submits twelve scenarios written for amateur use which might be useful to you. These stories are simple and easy to produce with the minimum of expense and equipment.

Question: I have some 16 mm film which I would like to have enlarged upon standard 35 mm film. Is this possible? *Answer:* Yes, provided your 16 mm pictures are clear and sharp. With the new negative and positive 16 mm stocks, it would be better to use the negative for enlarging purposes, for then a standard print may be made direct from the 16 mm negative. If your film is a positive, the laboratory will have to "shoot up" your film on a standard negative and then make another standard print by contact from it. Any laboratory that does 16 mm work will do this work for you. There are several in New York City.

Question: About how much would a 16 mm contact printer cost? *Answer:* The Duplex Company make a 16 mm contact printer that sells for around \$1300.00. This printer is identical with their standard printer, except that it is made to handle 16 mm film instead of standard film. Two frames are printed at once, increasing the speed of the machine.

Question: Is the Cooper-Hewett mercury vapor lamp useful in photography? *Answer:* It certainly is. All the big production studios use banks of these tubes regularly. The mercury vapor tube is especially rich in actinic light, which is very powerful and useful in all kinds of photography. This type of illumination gives soft, pleasant lighting effects and I would recommend its use for amateur work where possible.

Question: For illuminating title-boards, is it better to use two lights or one powerful one? *Answer:* One light may be used for titling, although a better and more even lighting can be obtained with two lamps, one on each side of the board.

Question: Where can I obtain a suitable enlarger for enlarging standard motion picture film? **Answer:** There now is on the market an enlarger made especially for enlarging motion picture film. It is called the Drem Enlarger, and permits the making of enlargements without cutting the film negative. Its cost is \$19.25. Further particulars may be had from Willoughby's, 110 West 32d St., New York City.



The Market Place

GOLF COURSE PHOTOGRAPHY THAT PAYS GOOD DIVIDENDS. — The way to make your camera pay its best dividends is to take pictures from which you can readily sell a large number of prints. The expense of getting the negative is the same, whether you sell one print or one hundred. Selling the larger number of prints, however, is what puts the more desirable figures in the profit column.

Here is an idea that any one with a camera can use to advantage, and the best part of it is that it pays good dividends. If you have a golf course in your community — and most communities have them these days — you have a good chance to make a nice profit from your ability to use a camera.

Every now and then we read of the millions of dollars that are spent annually on golf, with items such as balls, clubs, golf courses, and clubhouses taking the greatest amount, but little if any thought is given to what has been spent for photographs of golf courses. Why, because no one has ever stopped to think of the market for such photographs, nor the profit that could be made from it.

Every golfer is interested in his course. If he is a member of a country club he delights in telling his friends about the course and writing to out-of-town friends, wherein he loses no chance to tell about the particular advantages of his course.

Where does the camera and its dividends come in? Right here!

Every golfer would be glad to have pictures showing his golf course. Not only of the clubhouse, but scenes showing some of the fairways, some of the greens, and some of the hazards such as sand traps, bunkers around certain greens, or water holes, where he has to make careful shots so that his ball does not splash and sink from view.

If you are familiar with a golf course in your community you know which are the best-liked holes. If you are not familiar with the course, you can learn by following players occasionally, watching them and listening to their remarks about the holes, and from your knowledge of photography you will be able to pick out scenes that will lend themselves to pictorial treatment.

After you have taken the photographs there are several methods by which prints may be sold. Whether you decide to sell them in complete sets or individual prints it is preferable to print them on post cards.

The club membership offers you your best selling opportunity. Your first step should be to acquaint the

club membership with the fact that you have the cards. This can be done by mounting a complete set of them in a frame and hanging the frame in the golf shop or locker room where the members will see it, and your card or advertisement could be inserted neatly. After getting permission to display your wares you can approach the members either by personal solicitation or by writing them letters, calling their attention to the series as shown in your display.

By negotiating with the club professional, or the man in charge of the golf shop, you may be able to have a stock of the cards put in stock so that the members could buy them conveniently. In this way you could probably dispose of a large quantity quickly without the time and effort of personal solicitation. A personal friendship with the professional before you take the pictures might be helpful in the selection of scenes, and a good action photograph of the professional included in the set would not only be interesting to the membership, but would more surely get the professional interested in your project, and in that way your sales would be helped.

Another method of adding to your sales and profits would be to mount the entire series of prints in a small inexpensive album, with neatly lettered captions or titles in connection with each page. A neatly lettered title on the cover of the album would then make your product attractive and more easily sold. These albums could be bought for ten or fifteen cents each, as they would be quite simple, and contain just enough pages for twelve or fifteen prints.

Country club courses that are played over by a great many out-of-town visitors, such as in resort centers, would be a harvest ground for the camera enthusiast who wants to make his camera pay its own way. Visitors to golf courses enjoy having a souvenir set of pictures as a reminder of a golf course they have played over, and as a suggestion a score card could be mounted in the back of the album so that the visitor could copy his score right into it and have a complete record of his visit.

Hotels in resort communities would use pictures of golf courses. In most resort advertisements today some mention is made of golf facilities. The hotel then might be a good customer, and use a large number of prints, in sending literature to prospective guests. Nowadays many hotels have arrangements with certain golf courses in the community to permit their guests to play over the course. In their advertising to prospective guests, then, the hotel could reproduce some of your photographs, or send pictures of the course to those persons who wrote about the golf facilities.

Here, then, is a good opportunity to make ten, twelve, or fifteen interesting negatives pay a good dividend return on your investment in getting the photographs ready for the market.

And if there is more than one golf course in your vicinity, you are in luck — you can double or triple your sales outlets. — HARRY D. THORN.

THE DENCH DISPLAY SERVICE, Hohokus, New Jersey, offers a wide market for glossy, unmounted prints of striking retail store window and interior displays. Many a photographer has scores of such negatives in his files, taken to order for local retailers, who would not object to the photographer offering extra prints for trade paper use.

Ernest A. Dench, editorial director, is a recognized authority on window display, and since 1917 has regularly supplied leading trade journals in seven English-speaking countries with illustrated articles on store display subjects. The latter embrace all lines of mer-

chandise from automobiles to women's wear, and all timely events from New Year's to Christmas.

During the next three months Ernest A. Dench will purchase several hundred photographs of 1925 and 1926 Hallowe'en, Thanksgiving and Christmas displays devoted to the following lines of merchandise: Footwear, Silk Hosiery, Bakery Goods, Restaurants, Groceries, Fruits, Meats, Beauty Parlors, Stationery, Toiletries, Leather Goods, Phonographs, Radios, Furniture, House Furnishings, Banks, Electrical Appliances, Candy, Gas Appliances, Gift Shops and Departments, Juvenile Wear, Floral, Party Goods, Soda Fountain, Books, Toys, Sporting Goods, Hardware, Jewelry.

In most cases Dench will buy several extra prints of each acceptable subject. Either send a list of what you have to offer, or submit the offerings on approval. Payment will be made within thirty days of submission, at \$1.25 for the first print of each subject and 50c. apiece for the extra prints that may be ordered of the same subjects. Prints should be not smaller than 5" x 7" or 8" x 10".



The Photographic Review

E. J. WALL. F. C. S., F. R. P. S.

ARTIGUE PAPER. — Although there is little new in this note it may interest some. E. Irnebach gives the following method for making this paper:

Gelatine.....	20 g	154 gr.
Cane sugar syrup.....	40 ccm	308 min.
Sugar	20 g	154 gr.
Honey	10 g	77 min.
Lampblack	335 g	5 1/3 oz.
Water	1000 ccm	16 oz.

The gelatine should be soaked in the water, then melted by heat. The lampblack should be rubbed into a cream with alcohol and strained. The mixture should be applied to the paper with a brush with criss-cross strokes and evened out in the usual way. For use it should be sensitized with an alcoholic solution of ammonium bichromate, this being painted on the back, or the paper may be floated on the same. The exposure is comparatively short and development is best effected with a cream of boxwood sawdust and water, which may be poured over the print at a temperature of 27° C. (81° F.). Fixation is effected by mere washing in water (*Photo-Börse*, 1926, 8, 226). Thirty years ago this paper was much heralded as the only one that would give artistic prints, in fact as long as it was used the composition, etc., was a minor matter. It can give very fine results, but probably the fact that it cannot be obtained commercially and the extremely tender nature of the surface have caused it to fall into the discard.

A NEW REDUCER. — P. Strauss recommends the following solution as a single solution reducer:

Citric acid	10 g	77 gr.
Ammonia iron alum	20 g	154 gr.
Sulphuric acid, conc.	10 ccm	77 min.
Water	1000 ccm	16 oz.

Sodium bisulphate, NaHSO₄, 40 g (307 gr.), may be used instead of the sulphuric acid, or sodium sulphate, 50 g. (384 gr.), and hydrochloric acid 10 ccm, 77 min., may also be used in like manner. The action of this reducer lies midway between that of ferricyanide and hypo and persulphate (*Phot. Rund.*, *kinotech. Rund.*, 1926, 63, 29). The use of iron alum was suggested by H. Krause (*Zeits. wiss. Phot.*, 1919, 18, 192).

CYANOTYPE TONING. — P. Strauss suggests a modification of the usual method of blue toning that may present some useful features.

A			
Water	225 ccm	3 3/4 oz.	
Sulphuric acid, conc.	56 ccm	434 min.	
Add the acid slowly to the water, then add:			
Hot water	700 ccm	11 oz.	
Then dissolve in the following order:			
Alum	132 g	2 1/2 oz.	
Ammonia iron alum	95 g	730 gr.	
Sodium Sulphate.....	570 g	9 oz.	
Potassium permanganate ...	1 g	8 gr.	

Enough of the permanganate should be added to give the solution a decided pink tinge; the purpose of this is to oxidize any ferrous salt in the iron alum. The second stock solution is:

B			
Potassium ferricyanide	50 g	384 gr.	
Water	1000 ccm	16 oz.	

For use mix 1 part A, 1 part B and 40 parts water. When the desired color is obtained, wash as usual. The purpose of the sodium sulphate is to facilitate the washing out of the salts (*Phot. Rund.*; *kinotech. Rund.*, 1926, 63, 29). It would almost seem advisable to add some permanganate also to the ferricyanide, as this very frequently contains ferrous salts which tend to stain the whites bluish. A small quantity of potassium bichromate may be used for the same purpose.

HYPER-SENSITIZING. — G. Cerri has experimented with Ninck's method with particular application to panchro and ortho plates, using ammoniacal solution of silver chloride. Spots and blemishes due to the hands can be avoided by first washing the hands in 1 per cent solution of sulphuric acid with half the quantity of potassium bichromate, followed by soap and water. Ninck's centrifugal method of drying can be satisfactorily replaced by blowing a current of air across the plates. It was found that a plate, already sensitized with a dye, could not be hyper-sensitized with the ammoniacal silver chloride, but only if this was added to the dye bath. The following was found to be very effective and the plates very free from blemishes:

Pinacyanol, 0.1 alc. sol.	15 ccm	115 min.
Ammonio silver chloride.....	20 ccm	154 min.
Alcohol, 95%	200 ccm	3 1/5 oz.
Ammonia, sp. gr. 0.918.....	8 ccm	61 min.
Water to	1000 ccm	16 oz.

Within reasonable limits the quantity of alcohol does not greatly influence the sensitivity, but the greater the amount the softer the negative. The replacement of ammonia by thiosinamin resulted in complete loss of sensitizing power. Silver nitrate alone instead of the chloride had a sensitizing action but not so great as the ammonio-chloride; ammonia and nitrate was much inferior. Replacement of half the total silver in solution as ammoniacal chloride by silver nitrate increased the power and increased the clearness and diminished the contrast of the negatives. The results indicate that silver bromide and iodide should give similar results and that citrate and similar easily-reducible salts should

give still better results. Replacement of pinacyanol by pinachrom gave almost the same results, the relative hyper-sensitization varying with the region of the spectrum, though the latter dye showed the best results in the red, particularly when the alcohol was omitted. Pinachrom violet, pinachrom blue, pinacyanol blue and dicyanin were inferior. It was found that the silver chloride solution could be made and kept in daylight, the results being the same (*Notiz. chim.-indust.*, 1926, 1, 24,150; *C. A.* 1926, 20, 2463).

INTERMITTENCY ERROR. — R. Davis publishes a very complete and exhaustive report on the effect of intermittent and non-intermittent exposures behind a sector wheel. He comes to the conclusion that the difference varies with the particular emulsion used, the illumination, the number of interruptions and the rest periods between. When the illumination is above a certain level a greater effect results from the intermittent exposure, and conversely, for lower intensities a loss is obtained. The gain or loss is accentuated by intermittence. After extinguishing the illumination the latent image is subject to modification by two opposing forces, one tending to intensify it, the other to fade it, both rapidly increasing with time. At the higher illumination the resultant effect is a growth of density; at the lower, fading results. When the exposure is intermittent each interruption adds to the total growth or diminution of the image, but as the rest periods shorten, the change introduced by each interruption diminishes. Consequently, there should be a limit to the modification which an increase in the number of interruptions can cause. This indirect experimental evidence of the presence of the two opposing influences lends support to the view that the reaction between light and silver halide in the formation of the latent image is not confined to a single step. The paper is very full of tables and curves and should be consulted in the original (*Sci. Paper* 528, *Bureau of Standards*). This is an extremely important and useful paper, for it opens up a question that has considerable bearing on the determination of plate speeds. Abney was the first to point out the intermittency error and it has become one of the axioms so that most authorities have agreed that such exposures should not be used, as was evidenced by the late International Congress of Photography. Mees pointed out some years ago that the latent image increased slightly immediately after exposure in certain cases; that there was fading of the image has also been noted. But it has not so far as we are aware been pointed out that the two effects were so closely connected. This paper, if confirmed, would seem to open up the possibility of changes in the views of plate testing.

OPALESCECE IN NEGATIVES. — R. E. Liesegang, referring to Crabtree's statement that resinous or similar impurities in the alcohol used for drying negatives were the cause of the characteristic opalescence that so frequently occurs, suggests quite another reason for this. Crabtree had pointed out that the same effect could be obtained when quite pure gelatine, that is without any possible traces of lime or hypo salts, was treated with pure alcohol, and then assumed that a modification of the gelatine that contained less water was formed. Liesegang points out that it is well known in the making of gelatine sheets that too quick drying causes the appearance of innumerable air bubbles just as in the making of artificial ice that is very rapidly chilled. In the case of the gelatine there is formed an outer inelastic skin, through which the water later escapes, thus forming air bubbles, or almost vacua. The same formation may be secured by placing a sheet of 10 per cent gelatine solution on ice at about -10°C and allowing it to dry there.

The sheet has the final appearance of ground glass, being filled with innumerable small air spaces. Very strong alcohol acts in precisely the same way. The term "colloidal vacuum" is proposed for this phenomenon (*Phot. Rund.*, 1926, 63, 316). It was pointed out by König many years ago that while ethyl alcohol frequently causes this opalescence it was never or rarely caused by methyl alcohol, which rather negatives Liesegang's explanation.

SCREEN PLASTICS. — Roschdestwenski has introduced an arrangement for placing in front of projection screens on which a picture is viewed by transmitted light, consisting of two semi-cylindrical vessels, rooms or lenses with their axes at 90° to one another, filled with air or other gas. It is stated that these have actually been tried out in 8 x 6 meter, 26 x 19 ft., size with greatly increased plastic effect (*Filmtechnik*, 1926, 2, 54). It is well known that there is enhanced plasticity in a monocular picture when viewed through a large-diameter reading glass, but fancy a lens of 26 feet diameter. This adds another to the many fool ideas for obtaining stereoscopic effects for motion pictures. With such an arrangement the field of viewing must be limited to about 15° .

A PROJECTION SCREEN. — H. E. Jodoin has patented a screen, the specification for which is a masterpiece of ingenuity. It is first pointed out by the inventor that one of the disadvantages of existing screens is their liability to become damaged by moisture. A package each of red, green and blue Diamond dyes is dissolved in glycerine and $\frac{1}{2}$ ounce, 5 drops and 20 drops are respectively added to a thin mixture of calcimine and water and $\frac{1}{2}$ ounce of ammonium bichromate "dissolved in water to give a fine solution" to which glycerine is added. The addition of the dyes makes the screen responsive to each color, to the blue, the red and the green (*U. S. Pat.* 1,595,767). The real essence of this patent seems to be to claim the very old idea of a flexible fireproof coating. The addition of the dyes "in amounts insufficient to visibly change the apparent whiteness, but responsive to color in a projected beam" is mere flabdoodle. Why if it is so essential to preserve the surface from moisture one should add glycerine, one of the most hygroscopic compounds, is beyond the average intelligence.

DEVELOPING GREAT CONTRASTS. — K. Heller points out the great difficulty in developing subjects with great contrasts so that the highlights shall not be blocked up before the shadows are developed. To remedy this state of affairs, he exposes for the shadows, so that with a small stop the exposure is about 3 minutes with a rapid ortho plate. For development he uses first an old once-used glycin solution of the following composition:

Glycin	250 g	240 gr.
Sodium sulphite, dry	312.5 g	300 gr.
Potassium carbonate	1250 g	120 gr.
Water	1000 ccm	2 oz.

The sulphite should first be dissolved in warm water, then the glycin added, and then the potash in small lots, as considerable effervescence takes place. This forms a thin cream, which should be well shaken up and 2 or 3 parts diluted with 100 of water for use. This should be used for ordinary work and then bottled for use in the special cases. It turns brown but does not stain the plates. The plate with excessive contrasts will require about 30 minutes development in this, and the highlights should show on the back of the plate. Then, without washing, the plate should be immersed in the following developer at about 30°C . (86°F). for 25 seconds.

A		
Pyrocatechin	200 g	192 gr.
Water	1000 ccm	2 oz.
B		
Sodium sulphite, dry	166 g	478 gr.
Caustic soda	47 g	135 gr.
Water	1000 ccm	6 oz.

Make the solutions separately, then mix. Heller recalls the fact that with slight light action the image lies only on the surface of the film, while with longer exposures the image is deposited right through the film. The old glycin developer deposits silver evenly right through the film, whilst the warm solution only acts in the short time on the surface silver. Thus the shadows are developed without the lights being strengthened (*Phot. Korr.*, 1926, 62, 85). This strikes one as the very worst way to attain a soft negative and merely a waste of time and good material. If, as is correctly assumed by the author, the highlights are developed right through to the glass and the shadows only on the surface, it would seem but sensible to use a rapid-acting developer like plain metol and curtail the duration of development as soon as the whole image has appeared, and before the highlights have a chance to develop through the whole film.

RESIDUES.—Messrs. Crabtree & Ross, of the Kodak Research Laboratory, have dealt with the recovery of silver from used hypo baths, particularly in connection with cine film. A bath in which 1,000 ft. of positive film have been fixed contains approximately a little more than 1 oz. of silver, worth 65 cents. For each million feet there will be about \$750.00 worth of silver. In the case of negative film the bath is rejected when about 500 ft. of film has been processed, there being about 75 per cent more silver recoverable. Only about 75 per cent of the value of the silver in the bath is obtained in cash; there being loss in collection of the sludge, the cost of recovery being 5 per cent, cost of shipping 2 per cent and cost of refining 10 per cent. The precipitation of the silver as sulphide is very efficient, as silver sulphide is the most insoluble of all common silver salts. The objection to this is the offensive sulphuretted hydrogen that is evolved if the bath is acid. As this gas affects unexposed sensitive materials, it is essential to prevent this from entering a laboratory, which can be done by neutralizing the bath with wet caustic soda, though if the precipitation is done out-of-doors this neutralization is not necessary, and it adds to the cost. The used bath should be placed in a tank, raised from the floor to allow of convenient draining, and tested for acidity with a strip of red litmus paper; if this remains red the bath should be neutralized with a 22.5 per cent solution of caustic soda, which should be added in the ratio of 0.78 per cent, 1 oz. to 128. Stir well, again test with litmus and add more soda till it turns blue, showing alkalinity. Then add about one-fifth more soda to ensure distinct alkalinity. If the bath contained alum there will be a slight precipitate on adding the soda, but this clears up on the further addition. The sulphide solution is also a 22.5 per cent solution of sodium sulphide in hot water. Of this 1 part should be added to 128 parts. Stir well, filter a small quantity and add a little sulphide solution to the clear filtrate; if any precipitate occurs it proves that there is still silver in the bath and more sulphide must be added. Excess of sulphide, which means complete precipitation of the silver, can be proved by dipping a strip of lead acetate paper in the mixture, immediately removing; if this turns uniformly black, excess sulphide exists. The sludge should be allowed to settle, the clear liquid decanted or sy-

phoned off and the sludge dried by exposure to the air. As a fixed charge is made for refining, regardless of the quantity of residues, a goodly quantity should be collected before sending it to the refiners. The sludge may contain hypo, free sulphur, aluminum or chromium compounds, and from 40 to 70 per cent of silver. The zinc method is very effective and does not give rise to any offensive or deleterious gases. Zinc dust, granulated or sheet zinc may be used, the first only being of value for large scale recovery. The bath should be acidified, about 1 oz. acetic acid to 128. It should be well stirred frequently. The zinc dust should be added in the ratio of 5 g per liter (two-thirds oz. to 128 oz.) and allowed to stand over night. Precipitation will be complete in from 16 to 24 hours; but it is well to test, and some of the clear liquid should be removed and a strip of bright copper immersed therein. If after 1 minute the copper shows a silvery film the whole of the silver is not precipitated; but if the copper merely darkens the silver has been thrown out. It may also be tested with sodium sulphide. If necessary more zinc must be added and the mixture again allowed to stand. The sludge must be collected and dried as with the sulphide method. The silver content is from 15 to 40 per cent. There is very little difference in the cost of the two methods, but the zinc requires more attention in stirring and the precipitation is not so rapid.

Steigmann suggested in 1921 the use of sodium hydrosulphite, Na₂S₂O₄, claiming that the hypo was regenerated and that the bath could be used repeatedly. Firth & Higson (*J. S. C. I.*, 1923, 42, 427T) have shown that sodium tetrathionate and sulphate were formed and not hypo, so that Steigmann's statement is incorrect. The high cost of the hydrosulphite, the necessity of making the bath alkaline, the high temperature, 50° to 60° C. (120° to 140° F.), and the fact that about 2 days are required for precipitation, puts this method entirely out of the domain of practice. Electrolytic methods are not economical, actual tests proving that it costs approximately \$3.00 per 100 gallons, which is prohibitive as compared with the zinc or sulphide methods (*Brit. J. Phot.* 1926, 73, 522) in abstract; the complete article appears in *American Annual of Photography* 1927, 41, 159-178).

PLAIN PAPERS.—E. E. Jelley has patented the use of silver chlorate with citric or tartaric acid, for sensitizing papers without any colloid vehicle. Organic salts, such as the chlorobenzoates, chlorosalicylates, bromobenzoates, etc., may also be used. A brief exposure is given, 2 sec. to sunlight, the print then being developed with an acid physical developer. Various tones are obtained according to the length of exposure and the developing agent used (*Eng. Pat.* 253,380, 1925). Silver chlorate was first used by Spiller (*Yearbook Phot.*, 1874, 45) for printing out. Faint printing with subsequent physical development is also old.

GOLD TONING DEVELOPED PRINTS.—A. Steigmann states that prints developed to a warm brown can be toned blue with the following bath:

A		
Gold chloride (0.4 per cent sol., neutralized with chalk) ...	800 ccm	8 oz.
B		
Hypo	40 g	307 gr.
Thiocarbamid	40 g	307 gr.
Potassium metabisulphite ...	10 g	77 gr.
Water	500 ccm	8 oz.

Add A to B. After fixing and washing immerse the print in the above till the desired tone is obtained. He also states that these blue prints may be toned brown

by treatment with mercury salts (*Phot. Ind.*, 1926, 24, 979). The gold toning of developed prints was suggested by Eder & Pizzighelli in 1881. Why on earth one should tone a brown print with gold to get a blue and then tone it with mercury to get a brown again is a puzzle.

STRIPPING N. C. BACKING. — Messrs. Ross & Crabtree suggest the following method for stripping the non-curling gelatine coat from the backs of films. A sheet of glass or Kodaloid film should be coated with rubbercement, the best being "Frisket Cement" made by the Artists' Supply Co., Cleveland, Ohio. This should be thinned with benzol to the consistency of thin molasses and about 5 per cent by volume of amyl acetate added. This causes better adherence to the Kodaloid. The cement should be quickly applied with a brush, stroking always in the same direction. It will become tacky in 4 or 5 minutes; a second coat should then be applied at right angles to the first. As an extra precaution a third layer may be given in the same direction as the first. After drying for 30 minutes the support may be used or it may be allowed to stand several days or weeks before use. One edge of the film should be placed on the tacky surface and the whole gradually lowered and pressed into contact. If carefully done there is no buckling. Care should be taken that the edges are in contact everywhere. An enzyme may be used, but is unsatisfactory. The film on its support should be placed in a tray and flooded with 5 per cent sulphuric acid and the tray placed in warm water so as to raise the temperature of the acid to 38° to 43° C. (100° to 110° F.). Rubbing the coating with the finger tips will quickly remove it, but it can be removed without agitation in 15 minutes. The time varies with the hardness of the film and the temperature. After removal of the backing the film should be washed and dried. The film can then be readily stripped from the tacky support and if amyl acetate is used it will be quite clean, though should any cement adhere it can be removed by rubbing with the fingers (*Brit. J. Phot.*, 1926, 73, 569). This will be a useful tip for color workers who may want to use films for superposed pictures, as it enables the backing to be stripped prior to dye-toning. We have successfully stripped this backing by allowing the film to partly dry, lifting one corner with a penknife and rubbing the gelatine into a spill. The ticklish point is to just hit the psychological moment, when it is rather more than half dry. If too dry the film tears; if too wet it will not strip at all. This has been done while the film was held in the usual metal developing frames.

COPYING DRAWINGS. — Agfa have patented a process for copying black and white subjects, in which an unfixed negative on a non-hardened, slow emulsion of medium thickness is washed and immersed in a solution of:

Potassium ferricyanide	100 g	768 gr.
Ferric chloride	20 g	154 gr.
Potassium bromide	15 g	115 gr.
Water	1000 ccm	16 oz.

There is thus formed on the silver-containing places a loose deposit of Prussian blue, which prevents penetration of the ferric chloride that tans gelatine, while in the unexposed parts the gelatine is hardened. On washing, the deposit is rinsed away from the exposed parts but adheres to the hardened unexposed parts, owing to the mordant action of the ferric chloride. The plate is fixed and again washed. If the unexposed parts are relatively extensive, the plate is treated with a 25 per cent solution of potassium ferrocyanide to con-

vert the ferric chloride in the hardened parts into Prussian blue. The unhardened, exposed parts can be washed out with warm water, and the covering power of the hardened places increased by dyes. Uranium salts may replace the iron (*Eng. Pat.* 249, 467, 1925; *J. S. C. I.*, 1926, 45, 722B). This may be looked upon as a modification of Poitevin's old process of 1863, a principle that was used by Coustet in 1905 and more recently by Capstaff in the later of his Kodachrome patents (*U. S. Pat.* 1, 315, 464, 1919). Ferric chloride alone tans gelatine but the metallic ferricyanides act more vigorously.

EMULSION SENSITIZERS. — Agfa have applied for a patent for sensitizing emulsions by the addition of trithionate, tetrathionate or trithio-di-glycollate of sodium or potassium selenotriethionate. Or the corresponding salts of selenium or tellurium may be used. (*Eng. Pat.* 255, 846, 1925.)

BROMOIL BLEACHER. — E. Mayer has patented the addition of betaine hydrochloride to the ordinary bromoil bleach (*Ger. Pat.* 426, 661, 1924). What this may do is open to question; the sole previous use is in certain physiological work.

REVERSAL PROCESS. — J. G. Capstaff has patented a further improvement on his reversal process for cine films (*U. S. Pat.* 1,460,703; *This Journal*, 1924, 51) in which the principal steps were exposure, development, removal or bleaching of the silver image, clearing, controlling re-exposure, redevelopment and final fixing. Sometimes a tendency to re-reversal has been met with in the second development, to prevent which an alkaline bath was used prior to re-exposure. In some cases this does not work, and the now patented remedy is the addition to the bleaching bath of a silver salt of the acid used, thus in the permanganate plus sulphuric acid bath silver sulphate is formed. Silver halides will not act satisfactorily, probably because of their insolubility (*U. S. Pat.* 1,600,797, 1926).

BICHROMATE POISONING. — F. Pfund recommends that the bichromates should never be powdered in the dry state, but only when dampened with water, thus preventing any dust from flying about. Rubber gloves and finger stalls are very little use, as they are soon cut by the edges of the glass, etc. He strongly recommends from several years' experience the use of a 5 per cent solution of acid sodium sulphite. The hands should be well washed with water after using bichromates, then immersed in the acid sulphate for a minute and dried without washing. If the skin is already attacked the following salve will be found beneficial:

Precipitated sulphur 5 parts
Potassium carbonate 3 parts
Hot vaseline 55 parts
This should be well rubbed into the affected parts before going to bed. During the day ordinary alcohol should be freely applied to the places (*Photo-Börse*, 1926, 8, 275).

VARNISHES. — H. Hadert from many years' use recommends the following negative varnish:

Sandarac	174 g	3 oz.
Chloroform	22 ccm	164 min.
Oil of lavender	130 ccm	998 min.
Alcohol	1000 ccm	16 oz.

When dissolved, filter. This keeps well and gives a colorless film that will not crack. Monckhaven's old retouching medium is said to be the best. A saturated solution of ammonium carbonate is poured over pale shellac and allowed to stand for 24 hours with frequent

stirring. The liquid should then be poured off and water, in the ratio of about 8 to 1 of shellac, added. This liquid should be boiled till the lac dissolves, then filtered. Another good retouching medium is:

Shellac	100 g	768 gr.
Sandarac	600 g	10½ oz.
Mastic	600 g	10½ oz.
Ether	1000 ccm	16 oz.

Allow to stand with constant stirring till dissolved. Then add:

Benzol	100 ccm	768 min.
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Filter. For prints a 22 per cent solution of dammar in acetone is the best. This should be prepared at room temperature by allowing to stand for 14 days, then filtered. Apply with a brush (*Der Phot.*, 1926, 36, 259).

PRINTING WITH HEAVY METALS. — F. Schömmers suggests the following modification of Poitevin's old ferric chloride printing process. Paint gelatinized paper with a 20 per cent solution of commercial ferric chloride solution, dry. If instead of water alcohol be used, drying will be very quick. On exposure under a negative a white image of ferrous chloride is formed, which if left in the dark will entirely disappear and the paper may be used again. But if immersed in a 2 per cent solution of sodium carbonate there is formed a red negative image and a blue positive image, the two obviously being mixed up in the half tones. If the image is treated with a dilute sulphuric acid, ferric and ferrous sulphates are formed, and the latter is readily washed out. If instead of a negative a positive is used for printing and ordinary carbon tissue sensitized with the ferric chloride, it is only necessary to immerse the exposed tissue in hot water for the image to be washed away, as the ferrous chloride formed on exposure does not tan the gelatine, while the undecomposed ferric chloride does. Unfortunately the prints thus obtained are defective in the half tones, but if ferric citrate or oxalate are used good results are obtained. It is also suggested that if mercuric lactate be used, made by dissolving red mercuric oxide in lactic acid, and adding about three times the volume of 10 per cent solution of ferric oxalate, then good results are secured. The solution should be printed on paper, sized with starch, not gelatine. The exposure is about 10 to 30 minutes in the sun. Sepia images are obtained which disappear on treatment with a 3 per cent solution of formaldehyde, but the latent image may be developed with the hypo or sulphite. If it is treated with:

Formaldehyde	30 g	230 gr.
Cupric sulphate	15 g	115 gr.
Potassium bromide	15 g	115 gr.
Water	1000 ccm	16 oz.

The image is converted into mercury bromide, which can be developed with any ordinary developer or toned black with a selenium bath. If the paper is sensitized with a 20 per cent solution of selenic acid in 10 per cent solution of ferric oxalate, a red-brown image is obtained which only requires washing in water (*Das Atel.*, 1926, 33, 91, 104).

A SCREEN-FILM. — The Lignose G. m. b. H., of Berlin, has introduced a screen-film in the shape of film packs and roll film, daylight loading, each for four exposures. The color elements are in irregular mosaic, like the Autochrome and Agfa plates. It is stated that in consequence of the thinness of the celluloid base, there is no necessity to make any allowance in focusing. As with all other screen-plates, a compensating filter is

required and five different ones are obtainable: weak, for reproduction; normal, for ordinary work; strong, for intense illumination and strong contrasts; one for electric lighting and another for gas-filled lamps. The speed of the emulsion is stated to be about 60 to 80 times slower than ordinary plate. Development is effected with metol-hydro-ammonia as usual and acid bichromate recommended for reversal (*Phot. Chron.*, 1926, 33, 417).

TIME AND INTENSITY IN PHOTOGRAPHIC EXPOSURE. — L. A. Jones & V. C. Hall of the Kodak Research Laboratory, have published their fourth paper on the relation between time and intensity in photographic exposure, and reference should be made to the original for full details. Practically they find that if the *I* (intensity) factor of exposure is less than a certain value, it is impossible with any extension of development or exposure time to make all the silver halide grains developable. The minimum value of *I* varies with the emulsion, being approximately inversely proportional to the sensitivity. Thus with low intensity some of the grains become inert. The oft-reported presence of inert grains in an emulsion, therefore, probably is due to the fact that the intensity factor was not sufficiently high. Gamma infinity, that is the maximum contrast with infinite development, and the maximum density, depend to a great extent on the same factor. Therefore, the shape of the characteristic curve for complete development depends on intensity. It is thus important to specify the value of the intensity at which determination of the characteristic curve with complete development is obtained. The work does not afford any evidence as to relation between grain size or sensitivity and the intensity threshold. Probably the same factor is important in determining the color sensitiveness, in the value of sharpness and resolving power of an emulsion. The range of intensities so far used has been from 1 to 1,000,000 and further instruments to increase this range are projected (*J. Opt. Soc. Amer.*, 1926, 13, 443).

SAFELIGHTS. — H. Arens & J. Eggert propound the statement that an important factor to be taken into consideration of the color of safelights is the psychological sensitivity of the human eye. Their definition of safety of two lights is the ratio of the times in which equal fog is produced when the lights are of the same brightness. Full details with curves are given and the conclusions arrived at are that in the case of an ordinary plate an orange screen, transmitting from wavelength 580 to 700 with maximum transparency at 620, is the best. It was found that a screen, which only transmitted from 650, gave more fog than the above. Thus the less red a screen transmits the safer it is. For ortho emulsions the safelight should transmit from 620 to 700 with maximum at 650. For panchromatic plates a screen transmitting a maximum at 620 was found safer than the usual green one (*Zeits. wiss. Phot.*, 1926, 24, 2290). This would seem to be really an extension of Mees & Baker's work on efficiency of safelights (*Phot. J.*, 1907, 47, 268). Unfortunately no formulas are given for making such screens. The work is obviously based on the assumption that one wants to keep on examining the poor plate while developing, a practice which is now becoming obsolete and is certainly unnecessary, if thermo development be adopted. Besides that, the authors do not prove that the ordinary plates used were not red-sensitive, as nearly all are more or less, while practically insensitive to longer waves such as yellow and green.



Questions and Answers

AMIDOL DEVELOPER. — E. E. B., Sinking Spring, asks for the temperature coefficient of this developer. *Answer.* This is 2.0, but may, of course, be modified to suit the operator's ideas.

ENLARGING ON CLOTH. — I. L. F., Chicago, asks for a method for making enlargements on cloth. *Answer.* The following is frequently used:

Potassium iodide.....	125 gr.
Ammonium bromide.....	50 gr.
Ammonium chloride.....	16 gr.
Gelatine.....	96 gr.
White of egg.....	1 3/4 oz.
Water to.....	16 oz.

Soak the gelatine in 12 oz. of the water for 30 minutes, melt in a water bath, add the salts and cool down to 100° F., add the albumen, which must have been beaten to a froth and allowed to liquefy, then filtered. Apply with a sponge or immerse the cloth, dry and sensitize with:

Silver nitrate.....	1 1/2 oz.
Glacial acetic acid.....	3/4 oz.
Distilled water.....	16 oz.

Apply with a sponge and dry. Develop with

Gallic acid.....	96 gr.
Lead acetate.....	16 gr.
Water.....	16 oz.

Just before use add a little of the above silver solution. Fix in 20 per cent hypo solution.

ACID FIXING BATH. — H. D., Cleveland, wants a formula for this containing metabisulphite. *Answer.* The following acts well for plates:

Hypo.....	6 1/2 oz.
Potassium metabisulphite.....	1 oz.
Warm water to.....	16 oz.

For papers use:

Hypo.....	2 1/2 oz.
Metabisulphite.....	1/2 oz.
Warm water to.....	16 oz.

COPYING. — C. C. M., Trail, wants to copy pictures the same size with a 1A Junior Kodak and can not get the image the size required, and asks whether he can have a lens made to do this? *Answer.* To copy the same size there must be double the lens focus between the subject and the lens and the same distance between the lens and film. It is impossible to say the exact focus of this lens without measurement, but if a supplementary lens be used in front of the camera lens and the focus of the additional lens is equal to the distance of the picture an image the same size will be obtained.

REVERSING NEGATIVES. — R. E. L., Dallas, wants to know whether it is possible to reverse small cine films; whether there is any book on the subject and if it is possible to reverse ordinary cine film? *Answer.* There is no book on this subject, but the methods were described in our issues for 1923, July, p. 419; Dec., p. 702 and 1924, Jan., p. 51. It is not easy to reverse

ordinary film, as it contains too much gelatine in ratio to the silver. But the black silver image will be dissolved if, after development, the film is immersed in:

Potassium bichromate.....	80 gr.
Sulphuric acid.....	20 min.
Water.....	16 oz.

After washing well the unaffected bromide can be exposed to white light and developed. The difficulty in all these processes lies in determining the quantity of silver to be reversed in the second development, hence its exposure. This is the secret of the success of the Kodak method.

FERROTYPE CARDS. — W. E., New Orleans, finds that his results on these have a great tendency to be dark. Can they be lightened in any way? What developer is used?

Answer. These cards are coated with a gelatine emulsion. If the picture is too dark it is generally a sign of overexposure and overdevelopment. They can be reduced with any ordinary reducer, with about 3 times the usual quantity of water. Probably the following would act well:

A

Potassium permanganate.....	2 gr.
Sulphuric acid.....	2 min.
Water.....	16 oz.

B

Ammonium persulphate.....	192 gr.
Water.....	16 oz.

For use mix 1 part A, 3 parts B and 6 parts water. As soon as reduced enough, immerse in 2 per cent solution of potassium metabisulphite, and wash. The usual developer is made up on the following lines:

Sodium sulphite, dry.....	290 gr.
Hypo.....	5 1/4 oz.
Sodium carbonate, dry.....	80 gr.
Potassium bromide.....	80 gr.
Hydrochinon.....	200 gr.
Water to.....	16 oz.
Ammonia.....	80 min.

If the picture is too light, add more hypo; if too dark, add more ammonia.

COLORING PRINTS. — D. L. R., Miami, asks for a size for prints that are to be tinted with water colors, also a medium for mixing transparent oil colors. *Answer.* As a rule, developed prints do not require any preliminary preparation for tinting with water colors, which take well on the gelatine surfaces. But the following may be used:

Purified ox-gall.....	15 gr.
Methyl alcohol.....	1 oz.
Water.....	4 oz.

For mixing oil colors either the palest boiled linseed or poppy oils are used. The print must be first treated with a weak size of gelatine. Megilp is usually used for thinning down oil colors.

REMOVING EMULSION FROM FILM. — R. L. A., Crauford, asks how to remove the emulsion from films quickly with a cold solution, which will leave the celluloid clear and uninjured. *Answer.* This is not an easy matter. Rohn & Haes, of Darmstadt, Germany, market Degomma, which is used at a temperature of 95° F., being allowed to act for 3 or 4 hours. This is probably an enzyme, or culture of bacterium liquefaciens. Pepsin, trypsin and papain have also been recommended, but commercially they are far too costly. It may be worth while to experiment with barium chloride, which in 15 per cent solution at about 95° F. readily dissolves gelatine; a stronger solution might be used. The above strength forms a syrupy solution of

gelatine that does not putrefy or set. Obviously by diluting with water the metallic silver would precipitate in time, or commercially it would pay to super-centrifuge and sling out the silver by a continuous process. This would not affect the celluloid in any way. Barium chloride costs about 24 cents per lb. with probably a big reduction in lots.

ACETONE DEVELOPER.—W. A. D., Marysville, states that he has never seen a formula for developing films with acetone in lieu of soda. Is this because acetone is a solvent of celluloid and can it be used? Also he wants the formula for the stannous chloride preservative. *Answer.* There is not enough acetone in the normal negative developer to affect celluloid and there is no reason why it should not be used. Any developer can be successfully used for films in hot weather provided enough sodium sulphite be added. The stannous tartrate preservative is made as follows:

Stannous chloride	384 gr.
Tartaric acid	.538 gr.
Boiling water	.5½ oz.
When dissolved add:	
Sodium carbonate, dry	.422 gr.
Warm water	.5 oz.
Mix and add enough water to make 16 oz.	



Our Competitions

As announced last month our Monthly Competition will be discontinued for the present.

SENIOR COMPETITION

The first prize in the December Senior Competition was awarded to Bruce Metcalfe for his print entitled "The Cynic." This is an excellent piece of character portraiture and the firm-lipped smile, the glint in the eye, the side glance past the spectacles, all help materially in the characterization. The lighting is strong, leading to good modeling and the shadow details are well rendered, giving a very stereoscopic feeling to the print. The one thing which worries us a little bit is the sharp concentration of focus on one or two planes. The transition from a microscopic sharpness to a very vague woolliness in the coat is a trifle insistent and annoying. The graduations of sharpness in the face and the hat do not particularly catch our attention, but this woolliness of the coat is another thing, and it seems to us it would be well to remedy this during the printing by inserting some celluloid between the paper and the negative in the sharpest part of the coat collar. This was made with a 14-inch Dallmeyer lens on a 5 x 7 Studio camera. The exposure was three seconds by artificial light at *f*:5.6. The Eastman Portrait film was developed in rytol and enlarged on Gevaert Bromide.

The second prize was awarded to "La Belle Vénétienne" by E. J. G. Schermerhorn, one of our subscribers in the Dutch East Indies. This is a simple pyramidal composition full of charm and grace. The coquetry

of the fan before the face gives a bit of mystery and the hands are admirably disposed. This was made with a 6 x 9 cm Orion folding camera fitted with a Union double anastigmat of 13 cm focus. The exposure indoors at 9.00 A. M. in January was three seconds at *f*:6.3. The Kodak film was developed in rodinal and enlarged on Drem chamois bromoil paper.

The third prize was given to J. Herbert Saunders of England for this print "Early Morning — Whitby Harbor." Mr. Saunders is a pictorialist of many years standing, one of the most constant contributors to our monthly competitions, so faithful that even during the darkest days of the war hardly a month elapsed without an entry from him. He is very fond of figure studies and genre, and this picture, a pure landscape, is somewhat out of his ordinary vein. It is an interesting composition, showing a pleasant separation of planes and a fine rendering of mist. This was made with a 2¼ x 3¼ Graflex equipped with a 5¼" Kodak Anastigmat. Exposure in misty sunlight in the early morning in July was 1/25th second at *f*:8. The Kodak film was developed in metol and enlarged on Kodak Royal Bromide.

Honorable mentions were awarded as follows:—

Moored	U. Stephen Johnson
Dubbio	Antonio Saitta
Mother and Daughter	Valentino Sarra
Weeds	Dr. Max Thorek
Park Lagoon	Alfonso Weber

Comments were awarded as follows:—

Baby Jean	George G. Bliven
Pipes of Pan	Chas. Clayton, Jr.
On the Tyne	E. Coult
Little Brook Through Pasture	J. H. Field
Frank	Zolton Herzegh
Let There Be Light	I. Higo
A Mountain Road	Mrs. C. H. Johnston
Why Riverside Drive Complains	D. B. W. Kirschner
A Stairway	R. G. Mattice
The Arch in Winter	Edw. D. Mudge
Adirondack Mts.	Louis R. Murray
The Old Rail Fence	Irvin L. Oakes
An Indian Rural Scene	A. J. Pandian
Vaquero (Cuban Cowboy)	J. R. Ross
Sisters	Henry Sill
In October	Dr. F. F. Sornberger
Silent Sentinels	Jan C. Van de Wet

The first prize in the December Junior Competition was awarded to Carlo Baravalle of Turin, Italy, for his picture entitled "Galline," which, being interpreted into the vernacular, is hens. It has always seemed to us that the fowls of the farmyard, ducks, geese, hens, pigeons and all the rest, were well worthy the attention of the pictorialist. They have striking individualities and their actions are full of interest to the keen observer. At the same time, they are not willing to stand for the camera, their motions are quick and their minds work actively, so that the obtaining of picturesque and characteristic poses is not an easy matter, as witness many unsuccessful negatives in the writer's possession. Our Italian contributor has done very well, his grouping is effective and his lighting is bold and vivid. This was made with a 9 x 12 Reflex camera fitted with a Verito lens. The exposure at 3.00 P. M. in July was 1/50th second at *f*:4.5 with a K1 filter. The Eastman Commercial Ortho film was developed in MQ and enlarged on Kodura.

The second prize was awarded to Katherine M. Anderson for her print entitled "The Window." Whoever does not believe that the photography of a bay window in full sunlight in such a way as to show the contents of an aquarium full of water and the landscape outside, both in good detail, is a task of supreme difficulty, might try it.

The number of his wasted plates will probably not be two or three. This is not only a technical triumph but a charming bit of arrangement. It was made with a 4 x 5 Corona View camera fitted with an R. R. lens. The exposure in bright sunlight at 9.30 A. M. in February was 10 minutes at f:64 with a five-times filter. The Standard Ortho plate was developed in Activol and printed on palladium.

Honorable mentions were awarded as follows:—

Marjorie	John Stephen Carroll
After the Storm	C. M. Gaskin
Housetops	Edward McMurtry
Tony	Martin J. Shannon
Cross Sections	Horace Tyzack
Dawn	Norman G. Thorne

Commendations were awarded as follows: —

In Grand Central Terminal	J. V. D. Bucher
The Boy	F. B. Bristow
Baby Face	Malcolm Carpenter
Road to the Birches	Harold W. Cole
Sunset	Leland H. Croscup
Dolly	M. B. Doughton
Portrait of a Shepherd	Geo. C. D. Fridrik
Watchful	W. A. Gordon
The Drifted Creek	John Haining
Shopping	Thos. Hall
Thirteen	Hazel K. Hite
Miss A. S.	Victor J. Jireck
Rowe Lake, Moonlight	W. W. Kuntz
Grotesque	Jos. B. Legg
Pastoral	Dr. C. D. Martinetti
Resting	C. F. Mattice
Hidden Water	Lewis J. Merwin
The Lake in the Valley	Helen E. Miller
Homeward Bound	Parry H. Moon
A Wet Day in Bombay	N. J. Nalawalla
Evening Peace Descends	Victor Overman
Doublement	Dr. Frank Riebel
Hootch	Thomas Scott
Friends	Michael Traeger
Evening	R. Van Oosting, Jr.
In a Corner of the Kitchen	L. G. Wells

ROLL OF HONOR

FIRST PRIZE

J. H. Field 12	Walter Rutherford 6
Kenneth D. Smith 7	Chas. Clayton, Jr. 5

SECOND PRIZE

J. Herbert Saunders 8	Herbert Coates 6
Fred R. Dapprich 7	A. S. Workman 6

Antonio Saitta 5

THIRD PRIZE

Ralph B. Bonwit 5	Herbert J. Harper 5
Albert Williams 5	

HONORABLE MENTION SENIOR CLASS

Edw. B. Collins 11	Walter E. Owen 8
Fred E. Crum 11	Dr. K. Koike 7
Louis A. Dyar 11	Henry Sill 6
C. B. Rosher 10	Ralph R. Weddell 6
Roy E. Heiser 9	Y. Morinaga 5
Louis H. Murray 9	V. Sarra 5
C. W. Gibbs 8	J. A. Singler 5

Dr. Max Thorek 5

COMMENDATIONS SENIOR CLASS

Cornelia Clark 24	Allen Frazer 9
Bert Leach 24	Orman B. Humphrey, M. D. 9
I. Higo 21	U. Stephen Johnson 9
John B. Ziemanski 19	Bruce Metcalfe 8
Walter R. Henry 17	A. J. Pandian 8
Mrs. C. H. Johnston 14	Kwee Keim Toen 8

Ellen C. Hildebrand 13
J. W. Jeffers 13
Edward H. Smith 13
Frank H. Luwen 12
T. O'Hara 11
Hillary Bailey 9

Dr. Tadeusz Cyprian 5

Wm. O. Yates 7
Dr. F. F. Sornberger 7
E. J. G. Schermerhorn 7
Cyrus Biscardi 6
C. A. Heald 6
C. L. Durbin 5

HONORABLE MENTION JUNIOR CLASS

P. Modetti 7	John S. Carroll 6
Edw. D. Mudge 7	Green-Crane Studio 6
Bill Rice 7	Geo. C. Woolnough 6
Katherine M. Anderson 6	F. B. Hawkes 6
George Bliven 6	Chas. D. Hodges 5
J. A. Tappe 5	

COMMENDATIONS JUNIOR CLASS

W. W. Kuntz 54	Harold W. Cole 10
Herbert Dobscha 34	John C. Moddejonge 10
Edna Gordon 30	Valentino Sarra 10
L. J. Creegan 29	L. E. Edmundson 9
Th. L. Lim Eng Chee 27	Geo. S. Schilling 9
Stanley Shiner 27	John Wilkins 9
Maurice Smith 27	Earl K. Foreman 8
Stephen G. Simpson 25	Rex Mattice 8
Jas. S. Loomis 24	Junzaburo Mori 8
Wm. E. Barr 22	A. Leigh Sanders 8
Ikure Yoshida 19	T. Henry Uruma 8
C. Herbert Foster 17	Jas. O. Wilson 8
I. Matsushita 17	H. Fukioka 7
I. Kira 16	John Haining 7
Louis Fortriede 15	Harry Levine 7
Oliver Franz 15	Lewis J. Merwin 7
John Morris 15	T. C. Shindo 7
Stephen Palickar 14	Wm. H. Walton 7
Michael J. Pecora 14	Harold Alley 6
Burton Slade, Jr. 13	Russell Gore 6
A. M. Tomlinson 13	Mrs. L. N. Lindsay 6
J. C. Hundman 12	F. L. Plunkett 6
Irving Sparks 12	Luke H. Swank 6
James J. Creegan 11	L. G. Wells 6
Ralph S. Hayes 11	F. B. Bristow 6
Dr. C. D. Martinette 11	E. Coult 5
Irvin L. Oaks 11	Clinton E. Ford 5
Henry B. Van Fleet 11	Miss Blanche Mercer 5
	Dr. Walter S. Mellies 5

Alfred Opermann 5

THE INTERNATIONAL EXHIBIT AT SAN FRANCISCO

EDWARD C. DAY, PH.D.

The international exhibit of pictorial photography in San Francisco was held in the Palace of the Legion of Honor, which crowns a hill in Lincoln Park and is surrounded by a beautiful golf links.

If I can hit off the exhibit the way the fellow made a beautiful drive from tee to green, I shall be happy. In the court to the palace there sits Rodin's statue of Le Penseur deeply absorbed in thought. What does the thinker think? "If there be any virtue, and if there be any praise, think on these things," wrote the Apostle Paul.

To give brief, lucid directions is a virtue. "Down the hall and three rooms on your right," said the man in uniform. All praise is due those who made the selection of prints, and those who arranged the exhibit so carefully and attractively under glass on the walls. Thanks also to the people who signed their work legibly. The illumination was excellent and every picture showed to good advantage.

There was nothing listless to the photograph of the team coming through the sunlit wood by Harding; it had life, and no doubt the man in the wagon would give us a ride. Hold your horses; let's all make an Ausflug into the country with Holluber, and talk to folk along the way. Or let us hop on the Dieppe-Paris express with Bairstow and visit the Louvre. With Adolp Fritz we will take a trip to Vienna; ach, wie reizend muss Wien bei Abendstimmung sein! The picture of the children against the clouds by Professor Kopitz is a concordant group. Japonica must be a short way of designating something beautiful: in a "Design Japonica" Shimojima has combined simplicity and effectiveness with a bit of foliage, and the sun shimmering through a mist. Lederle exhibits a picture of the Thinker in the snow, and he must have done a little cool pondering himself to get that span of "Arches and Horses" together. Eaton of Australia takes us over rolling landscapes and to a lovely "Valley of Shadows" for a treat. That sepia of "The Spring" is a lovely thing. See how this picture of Tamalpais recedes in tone from the mass of foliage in the foreground across the marsh to the mountain. Was the skating good in that "Winter Garden"? Here is a man plowing in "The Gorge"; a man of the sod and a man of God is a fertile thought. Hulls, hands, housetops, alluring waterways, intriguing Treppen, fetching shadows, poesy and a posie, trees that whisper in the dusk, churches that invite to worship, and back of all these fine pictorial effects the men and women who made them.

It is interesting to run over the list of people in various walks of life who had been made the subject of study: artists, ballet girls, children in costume, a guard, an acrobat, a woman in a black hat, fishermen, hero worshippers, a beggar; then by name, Mildred, Lucrezia, Violette, Betti and Eudora, Mr. White, Mr. Warner, Mr. Redman, Mr. Harmer and Mr. Mortimer. Here was the portrait of one who might have said to the photographer, "See if you can bring out in my physiognomy 'whatsoever things are true, whatsoever things are honorable, whatsoever things are just'"; and of another who might have added, "'whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report in me.'"

As one passed from room to room, it was a delight to see the number of countries represented: Australia, Austria, Belgium, Canada, Czechoslovakia, England, France, Germany, Holland, Hungary, Italy, Java, New Zealand, Poland, Spain, Sweden, Switzerland and the United States. Doctors, Professors, Fellows of the Royal Photographic Society, a Major General, alike with men and women without degree or title, had participated in the impulse to pictorial expression. The catalogue number placed in the lower left corner of the picture enabled quick identification. Three of the pictures had been sold, but the announcement did not interfere with our enjoyment of them in passing. They were "The Prayer" by Drtikol of Prague; "The Darkness Deepens" and "A Castle of the Scots" by Whitehead of Alva, Scotland. Attention was attracted to the merits of a particular photograph now by an inquiry from a person not possessing a catalogue, now by an overheard remark, and again by the thoughtful phrasing of the title.

"Say Jim, you don't want to miss this picture," the Information Officer called, indicating a print entitled "Getting Ready for Deck Sports" by Sarah Louisa Laufer, A. R. P. S., of New York; "that's a faro layout; a genuine picture, I call it." A man and his wife were admiring the portrait of Eve Grey by Dorothy Wilding of London, and the woman, not having a cata-

logue, inquired, "What man is that picture by?" A little girl pointed to "The Spring Thaw" by John Skara of Chicago, commending it with "so pretty." Of the work of some of the Japanese artists on the Pacific coast a young man observed, "They are wonderful, all right." Over "The Old Stone Cottage," by Ture Sellman of Stockholm, a woman exclaimed, "Wouldn't that be lovely in color!" I liked the cheerful expression portrayed in "A Study from China" by Clarence W. Tucker of Covina, California. Just "fine" was said of "The Old Dutch Farmer" by Franz Ziegler of Zwolle, Holland. "The Winding Road" by A. Louis Goetz of Berkeley, which looked to a lady like a bit of twisted ribbon, elicited an "Isn't that perfect!" "On the Village Creek" by Max Schiel of Leipsic, was "cute" (sehr net) in the estimation of a High School girl. "Is that a portrait of Krishnamurti?" inquired a woman apropos of one of Berssenbrugge's portraits; which question was a compliment to the Hindu as well as to Holland. The pipe organ commenced playing while we were looking at a "Nocturne" by Cecil W. Bostock of Sydney, Australia; and why not fine music to go with good pictures, the one supplementing the other by adding to the enjoyment?

In the field of portraiture there was a lot of splendid work, for example: a bromide with the quality of a charcoal sketch by Hifumi Miyamoto of Los Angeles; the profiles by Ferd Flodin of Stockholm and Franz Ziegler of Holland; the portraits of Sr. Lopez and The Sculptor Muller, by Charles H. Brown and J. Walter Collinge respectively, of Santa Barbara; the studies by Denes Ronai of Budapest, and A. S. Weinberg of Groningen, Holland; the work of Allie F. Bramberg and Rabinovitch of New York, J. Ortiz Echague of Madrid, Hugo Erfurth of Dresden, Charles Borup, F. R. P. S., of London, John W. Sheeres of Oceanport, New Jersey, and Henry A. Hussey of San Francisco.

On looking out of the window just now, I saw a dog carrying off a deer-skin, trophy of the recent hunting season, from our neighbor's yard. Being a well-bred Russian hound, he dropped it when I went out and remonstrated, and he trotted off—quite respectfully. Of the noteworthy pictures of animals in the exhibit there were: a print of a Russian hound by Henry Hall of Arlington, New Jersey, entitled *The Aristocrat*; cows at their siesta by Franz Holluber of Vienna; horses on a hill by Riso Itano of Los Angeles; a carbon of egrets by Randal Rigby of St. Annes on the Sea, England; a porcelain parrot stalked somewhere in the wilds of New York by G. W. Harting; and a picture of a sea gull above the clouds by F. Y. Ogasawara of Portland, Oregon. Ella E. McBride of Seattle, showed a lovely print of a Shirley poppy; while K. Ota of Pasadena found material in a vine for a decorative panel, and H. Y. Summons of Virginia Water, England, achieved a thing of beauty with orchard trees by Stratford on Avon.

Were there any ships? Sure—workmanship, craftsmanship, marksmanship in such pictures as, "The Grey Ghost Out of the Fog," by Clark W. Thomas of Los Angeles; "In Hazy Light" by R. Morita of Seattle; and "Cargo" by Johan Helder of Ottawa, Canada. If C. R. Phipps of Chicago could see a "Sunlit Sail" by C. J. Symes, F. R. P. S., of Brinkerhead, and if Symes could see "White Wings—A Decoration," by Phipps, they would feel a tug of fellowship; and it would likely be no hardship for them to discuss the relative merits of the chloride and the transfer methods of making prints. Was it courtship or friendship that got the boys and boats together for the fine composition by J. Colin Unsworth, F. R. P. S., of Manchester, England, entitled "Tween Ebb and Flow"? "Magellans of Today," by Y. Morinaga of Seattle was a splendid trio of airships.

The other day two boys and I climbed a hill; upon reaching the crest we waved to a cattleman descending a trail, dug up a fern to take home, rolled a stone down a slope and then enjoyed the view.

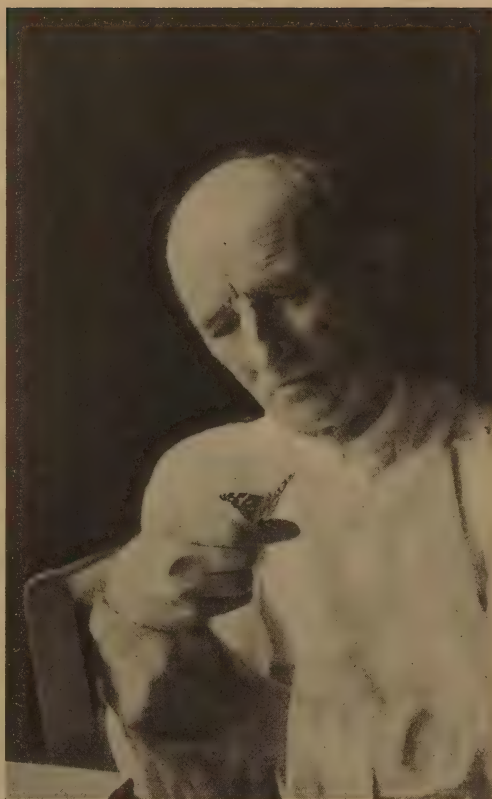
"What's a view?" asked one.

"It's what you're looking at," replied the other; "the sunlight on the tops of those trees, the boat out there on the bay, the mountain, and our place just over that machine going along the highway — that's a view." There were many well-rendered views in the exhibit: views along the Allegheny, the Abana and Danube rivers; views of a water front, of a quiet harbor, the ocean; a view of the castle of Vernante, of a street in Dalmatia, of somebody's cottage in Alpine snow, of afterglow in Sicily. The appreciative eye had found subject matter in a porch, a stairway, columns, a public pump, a railway station, a village, the smokestacks of Pittsburgh, the roofs of Quebec and the towers of Old Prague for pictorial expression.

The exhibit contained a number of studies of the nude. In some cases it was a study of the figure by itself; again, it was of the figure in a landscape, on a cliff or posed in a tree, with the title giving it a symbolic meaning. The titles of four of them were: *Exaltation*, *Le Papillon*, *A Study*, and *Illustration*. "*Exaltation*," by Anne Brigman of Oakland, was of a man high on a bluff against the clouds; and the outstanding feature of the print was, that it sent me to the Bible and the dictionary to look up the word exalt. "*Le Papillon*" was a picture of a girl with a doubtful-looking butterfly posed on her finger. One has to be clothed and in his right mind, know the ways of lepidoptera, and have an interested, sympathetic helper in order to get a real butterfly to spread its wings on your finger and succeed in photographing it. One photograph was of the human back. The back is a worthy subject for study; it is the burden-bearer (what does "*bac-ka-che*" spell?); one may carry a rucksack, a market-basket, or a papoose on the back. We are sometimes as backward in our progress as the children who were going to school under a big umbrella. The funny thing about it was, that their feet were pointing in one direction while locomotion was in the other; and it looked as if they had their shoes on backwards. Presently, however, they turned and ran along to school because they were late. "*Illustration*" was a photograph of a woman on a cliff with a wedge of wildfowl in the sky; the composition was interesting and the birds were fine, but what does a sea fowl care for the nude, unless it be the nudibranchiata.

Light and illumination were the theme for several fine prints on exhibition. Clark Blickensderfer of Denver showed "*The Silver Dome*." John Paul Edwards of Oakland exhibited "*The White Tower, Rothenberg*." Generalmajor Maximilian Karnitschnigg of Graz, Austria, portrayed a lighted vase. T. Wanski of Posnan, Poland, had a print entitled "*Against the Light*." S. Jasienski, of Bienne, Switzerland, chose "*Southlight*" for a theme. Carl C. Distler of Newport, Kentucky, had a study of "*Morning Sunlight*"; while "*Playing Sunlight*" was the title of a picture by Denzo Nakawaga of Portland, Oregon. Last but not least, Eleanor L. Smith of San Diego exhibited a lovely print of sunlight on a wall.

A worthy contribution to the collection was made by pictures of churches. H. R. Heath of London had a print of the crypt in Canterbury Cathedral. Rudolf Padouk of Caslav, Czechoslovakia, depicted a grain-field with a church on a hill and entitled it "*Before the Harvest*." J. Em. Borrenbergen of Antwerp called his study of a chapel "*When the Evening Bell is Ringing*." Is there not a chime to his name like the sound of a



EDWARD C. DAY, PH.D.

chapel bell? Anson Herrick of San Francisco showed the "*Entrance to Church No. 2*"; while Georges Tardy of Nevers, France, gave us a glimpse of a worshipper through the open door of the "*Church of La Clarté*." One who worships in spirit and in truth is a light to those around him.

The exhibit was as lovely as the Pyramis that came out of its chrysalis and sipped sugar water from our finger, and was as hard to let go.



Notes and News

PHOTOGRAMS OF THE YEAR 1926. — The Annual Review for 1927 of the World's Pictorial Photographic Work. Edited by F. J. Mortimer, F. R. P. S., Boston, American Photographic Publishing Co., Price, paper \$2.25, cloth \$3.25.

This, the 32nd annual volume of this beautiful annual is similar in its essential characteristics to the numbers of recent years. The outstanding feature, of course, is the series of most beautifully reproduced half-tones showing pictorial work of the principal photographic

workers of the world. Some of these, are, as usual, mounted on gray inserts and the rest are largely full page illustrations. They afford skilled selection of works which will illustrate the prevailing trend in pictorial photography.

The text matter includes criticism of the pictures and articles on pictorial progress in various countries in the world. Evidently this section is the famed bed of Procrustes and articles are squeezed into a definite amount of space irrespective of whether the author is allowed to fully develop his theme or not. This applies particularly to the scrap on "Photography in America" by the present reviewer which has been cut to such an extent that it is neither coherent nor concluded. We may add that the late orders received by the American publishers were so numerous that the importation was not sufficient to fill all orders and consequently those desirous of the book must obtain it from their photographic dealer as the publishers have none left in stock. — F. R. F.

PROJEKTION UND PROJEKTIONSVORTRAG, by Dr. Kuhfahl. Union Deutsche Verlagsgesellschaft, Berlin. Price \$1.50.

This is an elementary book dealing with projection. The various light sources and optical systems are simply yet well explained. It might have been as well to have included methods for correctly centering the light, for although the well-known figures are given of the appearance of the screen when the light is out of center, there is no explanation as to the cause or remedies, so that the reader is left in utter ignorance, unless he knows, as to what these diagrams mean. Naturally German instruments only are dealt with. The making of slides, the preparation of lectures and cinematographic work are dealt with, but the latter in rather a perfunctory manner, so that it is not of much value to the increasing army of cine amateurs, most of whom are utterly ignorant of the principles of projection. — E. J. W.

RATHGEBER IM PHOTOGRAPHIEREN, by L. David. Wm. Knapp, Halle. Price \$1.00.

A textbook that has reached a sale of 645 thousand, like good wine, needs no bush. It is a thoroughly practical guide for the amateur, is fully up-to-date and well illustrated. An excellent feature is that the important instructions are emphasized by a heavy black line at one side, so that the novice can at once see what he should carefully note. — E. J. W.

DER SICHTBARE MENSCH, by Béla Balázs. W. Knapp, Halle. Price paper \$1.25, bound \$1.50.

The fact that this work has called for a second edition proves that it must possess some considerable merit. The author is one of the more recent artistic producers of motion pictures and presents his creed that the film is Art. He deals with the physiognomy, the play of the features, color films, taking films, grotesques, etc. Practically one may look upon it as a treatise on the dramatic art of the screen or science of the film. For the producer of and those interested in the psychology of motion pictures the book will be interesting. — E. J. W.

REZEPTE, TABELLEN U. ARBEITSVORSCHRIFTEN FÜR PHOTOGRAPHIE, by J. M. Eder. W. Knapp, Halle. Price, paper \$2.00, bound \$2.50.

This work has long been one of those convenient additions to one's library which are consulted when one wants a standard formula or method of working. This, the 13th edition, is much enlarged and comprises every possible branch of photography and photomechanical

work with the latest information on each subject. Numerous tables are also included. — E. J. W.

THE ANALYSIS OF ART, by DeWitt H. Parker. Yale University Press, New Haven. Price \$4.00.

Whether art can ever be learnt from books is an open question in many minds, even the author admits this. His main idea has been "to describe art as good painters have always sought to paint nature, from the model rather than from mere information or academic canons and formulae." With this as his text he deals with aesthetic form, design and representation, art and pain, the paradox of industrial arts and the function of art, illustrating his points by 72 half-tone reproductions of well-known paintings, sculpture and architectural subjects. It is an extremely interesting book and one that calls for careful study rather than mere perusal — one that ought to be taken up at intervals and carefully read and thought over. The only criticism that one may possibly make of an otherwise well printed and gotten up book, is as to whether some of the reproductions are faithful, that is whether better results are not possible by the use of suitable plates and filters, as many show a blackness that strikes one as untrue. — E. J. W.

IMPRESSIONS OF OLD NEW ORLEANS. A Book of Pictures by Arnold Genthe. Geo. H. Doran Co., New York. Price \$5.00.

A brief introduction by Grace King sketches how New Orleans was made, but its story is better told by the one hundred and one pictures by Mr. Genthe, who puts in a foreword of the city of today. To those who have never visited this old-world haunt, and quite possibly to many who have, this volume will open up possibilities and vistas that are unexpected and unseen by the average visitor. There is much that is bizarre and quaint, much that is artistic. The only serious criticism that can be made is as to the extraordinary low, dark key of the reproductions. Shadows there are in nearly all, but never a gleam of sunlight, the result being that one gets the impression that New Orleans is a city of dark, sunless streets and buildings. Naturally the composition of the pictures is excellent and some of high outstanding merit, particularly those of the old ironwork. — E. J. W.

PHOTOMETRY, by J. W. T. Walsh. D. Van Nostrand Co., New York. Price \$12.00.

Based on the author's personal experience as senior assistant of the photometric division of the National Physical Laboratory in England and elsewhere, this work is thoroughly practical and up-to-date. Wisely too the author restricts it to the actual measurement of light flux, candle-power, illumination, etc., and has excluded the uses of such measurements. Another excellent feature is that obsolete, out-of-date instruments and methods are merely mentioned and the references to the original memoirs given. Opening with historical notes on early photometers and photometric standards we have a treatise on light, the eye and vision, the principles of photometry and standards of candle-power. These subjects engross five chapters and the next four deal with the practice of photometry itself and the measurement of color. Physical and illumination photometry, the measurement of brightness, of reflection and transmission factors, projection and stellar photometry, with an excellent chapter on the photometric laboratory itself conclude the main text, while some very useful appendices of tables, etc., add value to the work. Each subject is dealt with in a very thorough manner, both from the practical and theoretical standpoints, and where necessary diagrams are

very freely used to elucidate points, and one can not refrain from high commendation of the clearness of these. At the end of each chapter is a bibliography of the subjects, this being followed by the footnotes, which are unusually complete and exhaustive. Although the price of this work may seem high it is well worth it and it will at once deservedly take its place as the standard work on the subject. — E. J. W.

Although the Home Study Department of the New York Institute of Photography at 10 West 33rd Street, New York, has been in operation for only two years, the tremendous demand from students all over the globe has demonstrated that there is a great need for adequate instruction by correspondence in all of the various branches of the photographic profession.

The Institute has been giving Resident Instruction for more than seventeen years. So great has been the success of the Home Study Courses, which are based upon the Institute's Resident Instruction in Professional Photography and in Motion Picture Photography under the able direction of Carl Louis Gregory, F. R. P. S., Dean of the Institute, that the Directors have decided to extend the scope of instruction by adding a course in Commercial Finishing for Amateurs.

It has never been asserted by the Institute that Home Study is quite as good as resident instruction. But so many requests for instruction by correspondence have been made by students, whose circumstances will not permit them to take the time required for personal attendance in the modernly equipped studios and laboratories of the school, that a Home Study Department was established. A large number of the Institute's correspondence graduates are now established in positions or are in business for themselves, who would not otherwise have had the opportunity to engage in this interesting and profitable profession.

The Agfa \$2000.00 prize contest which closed September 13, proved very popular throughout the country and over 25,000 prints were submitted. Naturally the judges, who were Donald McMillan, the explorer, Nicholas Haz, the photographer and J. M. Boyle, a New York newspaper publisher, had a considerable task which required much time and so the prizes were not finally awarded until December 13.

The grand prize of \$250.00 was awarded to Paul W. MacFarlane of Los Angeles. The four first prizes in the various classes were awarded to Peter Gust, Milwaukee, M. A. Obremski, of Syracuse, William H. Rittase of Philadelphia and Mildred Hanna of Auburn, Nebraska. Only one of these five prize winners is in the list of American Pictorialists published in *The American Annual of Photography*, so that the oft-repeated statement that those who are well known win all the prizes did not seem to work in this instance.

The list of all the prize winners, nearly 1,000 in number, has been published by Agfa Products, Inc., and in its pages will be found many names of pictorialists. Contests such as this undoubtedly awake great interest in photography and pictorialism among those from whom the next generation of pictorialists must necessarily be recruited.

Mr. W. H. Salmon, until recently Vice-President and Director of the Defender Photo Supply Company of Rochester, N. Y., has resigned to assume management of the New York City office of The Haloid Company, manufacturers of photographic paper. Mr. Salmon has been with the Defender Company, except for a short interval, for nineteen years. Beginning in a minor sales



MR. W. H. SALMON

capacity, he was advanced from branch manager to general sales manager and finally to Vice-President and Director. His acquaintance with the photographic trade is country-wide. At the present time he is a member of the Executive Board of the Photographic Manufacturers Exhibitors Bureau. He is a graduate of the University of Rochester and a member of the Theta Delta Chi fraternity.

Mr. Salmon takes up his duties as manager of The Haloid Company's branch in New York City on January 3rd, 1927. He succeeds Mr. C. H. Daws, who has represented The Haloid Company in the Metropolis for fifteen years and who now retires. The Haloid Company, whose factory is at Rochester, N. Y., maintains branches at New York, Boston, Chicago, Los Angeles, San Francisco and Seattle. Its officers are: Gilbert E. Mosher, President, J. N. Walmsley and E. C. Yauck, Vice-Presidents, J. R. Wilson, Secretary and Treasurer.

THE BROOKLYN INSTITUTE OF ARTS AND SCIENCES, BROOKLYN, N. Y., DEPARTMENT OF PHOTOGRAPHY. — We start the New Year with the interestingly excellent prints of Dr. Ruzicka of New York and Prague, still on our studio walls, where they have given so much pleasure to our members.

On January 6, we have Miss Lauffer's Class.

On January 7, Mr. William H. Zerbe's demonstration, the fifth in a series, subject, "Table-Top Photography," showing interesting compositions that can be arranged on a table, using toys and object for models, and electric light and flashlight for illumination.

January 10, Miss Lauffer will exhibit a series of prints, supposedly of her recent European trip.

January 17, Mr. Roger S. Estey, M. S., will give a talk and demonstration on "how to increase the speed of a plate some twenty times," showing how from a front row in the center of the balcony, he photographed a "revue" and actually got good results.

We announce that our thirty-seventh annual exhibition of prints will be this year hung in the Brooklyn Museum Building, Eastern Parkway, and will be on exhibition during the whole of May, 1927, and we take this opportunity to extend to all our friends of the magazines and to those composing the various camera clubs in our own dear land and to those throughout Europe our hearty New Year Greetings. — MYERS R. JONES.

BOSTON Y. M. C. UNION CAMERA CLUB. — Hock, Ye! Hock, Ye! Feller Pittografas!! Grittings, an a Heppy Noo Yer!! Be it Nun, —

De necks mitting by de KAMERA Klub will be on de 1st 2sdi in de Noo Yer, viz. Janooarry 4rt from aight acluck —

De mitting'll be for de poipuss from heering our fellamemba Mr. Horace Van Everen tell us 'bout "The High Sierras" an sho us sum ov hiz lantern slyd pitchas.

Oh, don't fertig it by de necks pitcher compartition as

how all de vyoos iss 2 B about "Bowston" oder de beens, de Hubs, de Cotfish, de hellavated RR in de Scrubway, oder eenythink atoll whot meks yoo think 'bout this byootyful city.

Yi, yi, yi, yi, — Enny Clarke from de Lewis an Clarke Expeditions, hez a hanouncement — De Hull Kraut for de necks Howting will mit by de Klub rums on Sunday 9th, at tin oclock to go to Cleetendale by de stritcoz, de hellavated to Mawldin an by de buss to de wildaniss to gredually tek luffly pitchers.

Nize Klub! rid all diss letta, wile de prezidunc, an de suckretary is away by de vecashuns, now I'll tell yoo a troo ferry story —

Wunce oppon atime it wuz a pitcher sho at de Klub wot didn't geeve de five dollara to frenk fraipry (Yoo tink maybe wot I'm keeding yoo, bot eets troo, X my hot) De lest munt's compartition woz won by Lenny Kresge de Scolpture wot med it de Broomowill from de leedle skeep (Hm! Scotch a dollink Klub, ett opp all de Fairysighaneyed!!

(And Boston is the Hub of the Universe!! — Editor)

FORTHCOMING EXHIBITIONS

Northern International Exhibition of Photography Entries close November 20	Dec. 19, 1926 to Jan. 29, 1927	Hon. Exhibition Secretary, W. Johnson, 30 Hartington Road, Chorlton-cum-Hardy, Manchester, England
Eighth Buffalo Salon Entries close December 13	Jan. 1 to 16, 1927	Clyde A. Pierman, 45 Pembroke Ave., Buffalo, N. Y.
Tenth International Salon of the Camera Pictorialists of Los Angeles	Jan. 3, to 31, 1927	Salon Committee, 731 South Hope St., Los Angeles, Calif.
American Photography Seventh Annual Competition. Entries close February 1, 1927. Exhibited at various camera clubs		American Photographic Publishing Co., 428 Newbury St., Boston, Mass.
Berry Camera Club	Feb. 21 to 27, 1927	Hon. Secretary, Tom J. Edwards, 44 Tynewydd Road, Barry, Glamorgan, Wales
Fourteenth Pittsburgh Salon Entries close, Foreign, February 5, 1927 Entries close, American, February 19, 1927	March, 1927	B. H. Chatto, 1300 Milton Ave., Pittsburgh, Pa.
Third Liverpool Salon Entries close March 5, 1927	March 26 to April 19, 1927	E. Chambré Hardman, 51A Bold Street, Liverpool, England
Nineteenth Scottish National Photographic Salon Entries close March 3, 1927 (For photographers resident in Scotland or Scots residing abroad)	April 2 to 16, 1927	Hon. Salon Secretary, Holms Carlile 21 Greenlaw Ave., Paisley, Scotland
Brussels International Salon Entries close March 15, 1927 Entry fee, 20 francs	April 16 to May 1, 1927	M. M. Devaivre, 152 Rue Markelbach, Brussels, Belgium
Fourth Annual Exhibition Bridge of Allan and District Photographic Society. Entries close March 30, 1927	April 18 to 30, 1927	Exhibition Secretary, Miss Margaret Hughes, Rhu Allan, Bridge of Allan, Scotland
First Japanese Salon Tokyo and Osaka Entries close April 15. Fee \$1.00	May 1 to June 7, 1927	American Photographic Publishing Co., 428 Newbury St., Boston, Mass.
Third International Exhibition of Pictorial Photography under auspices of The Seattle Camera Club. Entries close April 10. Entrance fee \$1.00	May 5 to 20, 1927	Dr. K. Koike, 422½ Main St., Seattle, Wash.
Fourth Midland Salon of Photography Entries close Aug. 15	September 3 to 30, 1927	The Honorable Secretary, 203 Mansfield Road, Nottingham, England
Twenty-second International Salon, Paris. Entries close Sept. 15, 1927	Oct. 1 to 15, 1927	Société Française de Photographie, 51, Rue de Clichy, Paris 9, France

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Selected by Dr. Peter Landow

Of all the collections of photographic studies of the nude which we have yet seen, this impresses us as being at once the most interesting and the most valuable. The editor states that he has inspected thousands of photographs of the nude of different nationalities taken by a great number of photographers and has included all that he found worthy of reproduction. He feels that the selection was extremely difficult because of the fact that he desired to include pictures of not only European but other races and that none of the pictures were to offer a repetition of attitude or motif. He has also excluded every photograph which conveyed the least suggestion of the erotic and included only pictures of such bodies as appeared beautiful from a purely artistic point of view. We have consequently in this book a great diversity of types, poses and treatments, mostly of European women classified by nationalities, but also including Oriental and Asiatic subjects. The reproduction by photo-lithography in a deep velvety sepia ink is faultless and the reproductions are as good as the original photographs.

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The ideal way for the artist to use the figure is by direct studies of the nude, but as this is not always possible, a careful study of anatomy and the use of well posed photographs of the nude figure have long been found to be excellent substitutes.

The poses provided in this book were especially made with such ideas in mind and the authors give examples showing how various figures from the plates have been actually used for posters and advertisements. The text matter closes with a description of each plate and suggestions as to why it was taken and the purposes to which it may be put. The illustrations comprise 37 reproductions from drawings and photographs showing how the human figure has been used in art work, and 117 reproductions of photographs of the human figure, men, women and children, a large number of the plates containing more than a single figure.

The positions include sitting, reclining, standing, bending and kneeling and action poses. They have great value to the photographer as indicating what may be done in this line of work, as well as to the art student. The book is attractively bound in black cloth with a decorative cover. **Price \$8.00.**

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This method has many novel features; its object is to interest, to instruct and to inspire, and its claims are based not entirely upon its originality, but by appealing to the imagination of his readers, the author hopes to convey to their minds in a rapid and pleasant way many facts which would otherwise take them a long time to assimilate.

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The diagrams are numerous, running into hundreds, and are accompanied by notes which render them independent from the letterpress. The work has been conceived on such lines as to make it self-sufficient, and it is not in any sense an adaptation of any of the existing books.

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Hitherto it has been very generally taken for granted that of all the process of photographic and pictorial reproduction, photogravure was the most inaccessible to small business houses and the one-man worker. So far from there being any truth whatever in that idea the author of this book proceeds to set forth succinctly from beginning to end the process of gravure plate making and proofing. Cost of a small but useful installation is shown to be trifling compared to that necessary for other better known though less effective photo-reproductive processes. The sufficiency of the instructions is proved by the inclusion of a gravure frontispiece made by Mr. Bennett according to his own working instructions.

CONTENTS — Introductory chapter — General survey of the process — Materials required — Negatives for photogravure — Preparation of the positive — Its make-up for printing the resist — Tissues for resist and their sensitizing — Screening, its method, and the function of the screen ruling — Illuminants for screening — Illuminants for sunlight — Illuminants for electric arc light — Illuminants for collimated incandescent light — Transparency printing — Developing the resist — Making-up for etching — Etching baths and their characteristics — Etching by multiple baths — An alternative simplified etching method — The etched plate — cleaning, appraising, touching up, printing — The press — inks, paper, materials — Soaking of paper in relation to its surface — Papers classified — Characteristics of ink — How to pull a proof — Toned proofs and natural proofs — Rotary as distinct from flat plate gravure — Special problems of rotary gravure and how they are met — The cylinder and cylinder etching — Replacement of rag wiping with the "doctor blade" — Characteristics of paper and ink for rotary gravure — A simple gravure machine and its working.

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The Pictorial Annual *of the Royal Photographic Society of Great Britain*

1926

WITH A CRITICAL DISSERTATION

By F. C. TILNEY, F. R. P. S.

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Adv. 15

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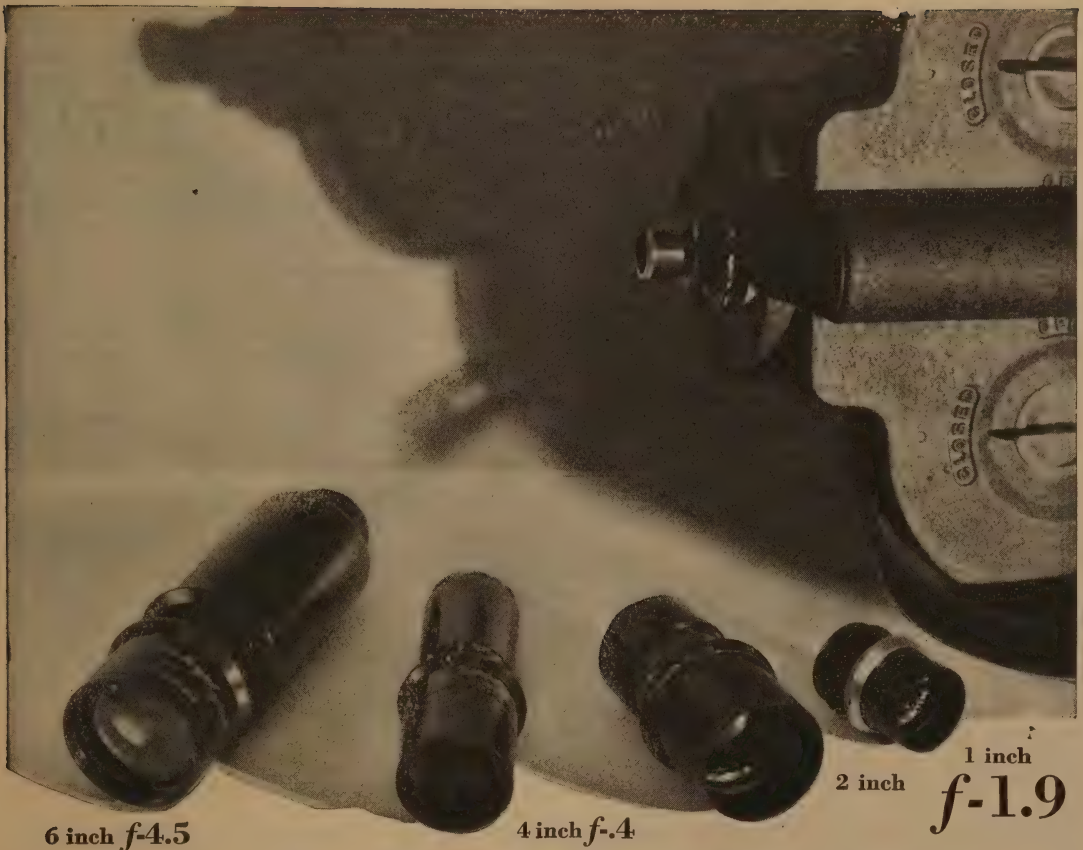
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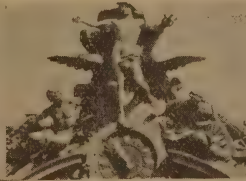
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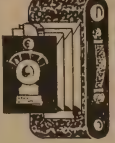
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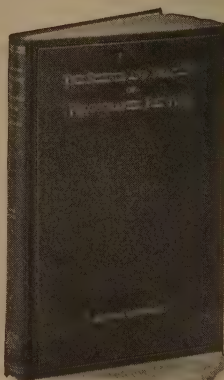
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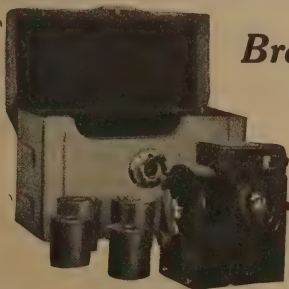
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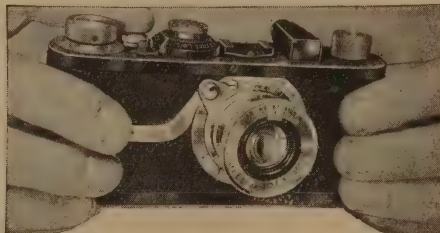
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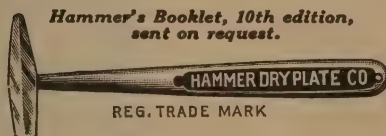
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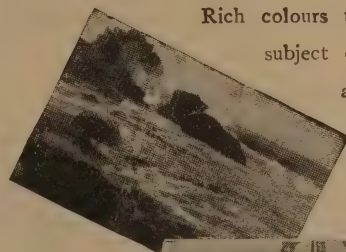
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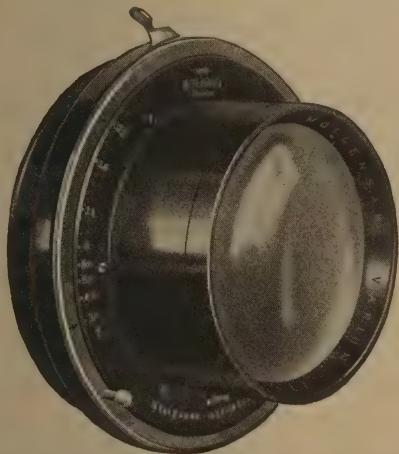
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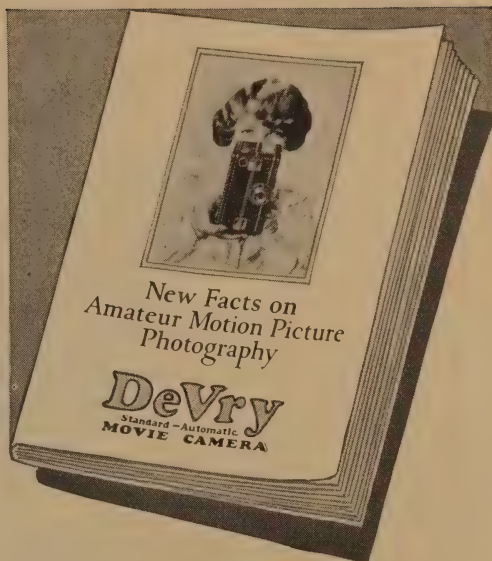
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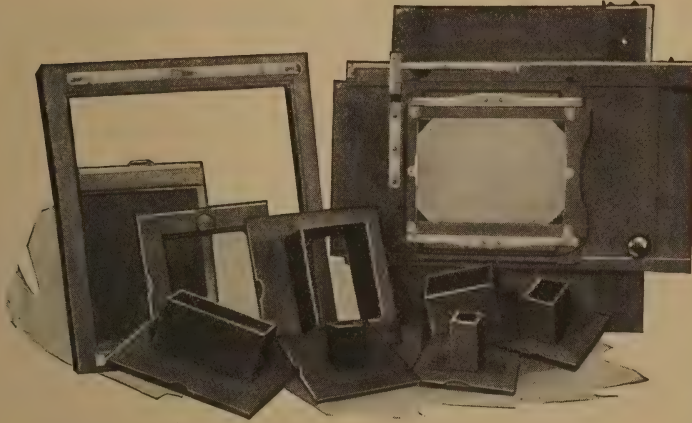
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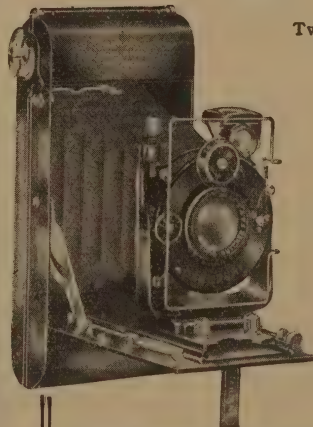
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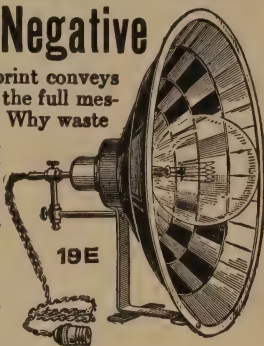
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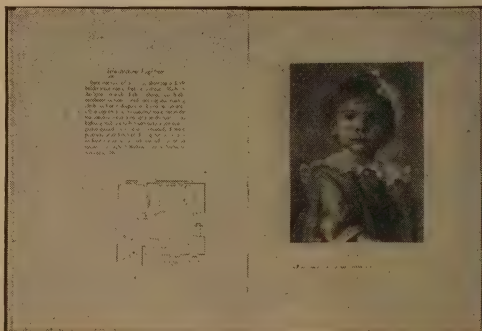
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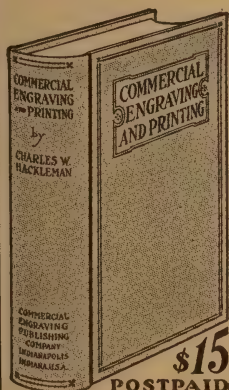
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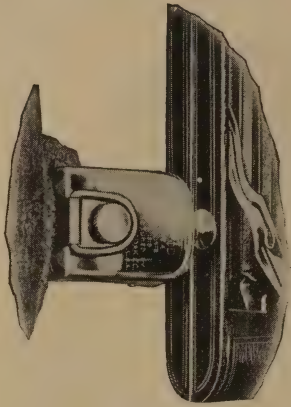


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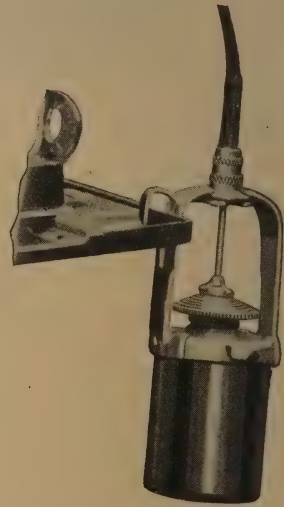
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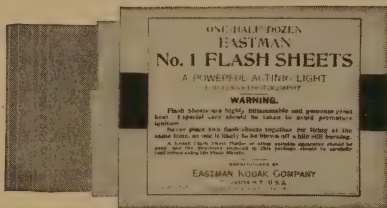
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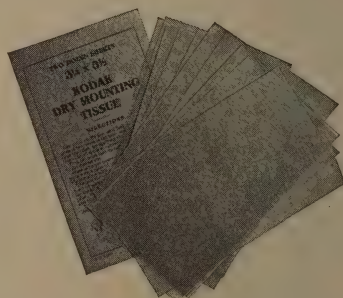
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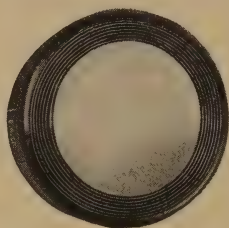
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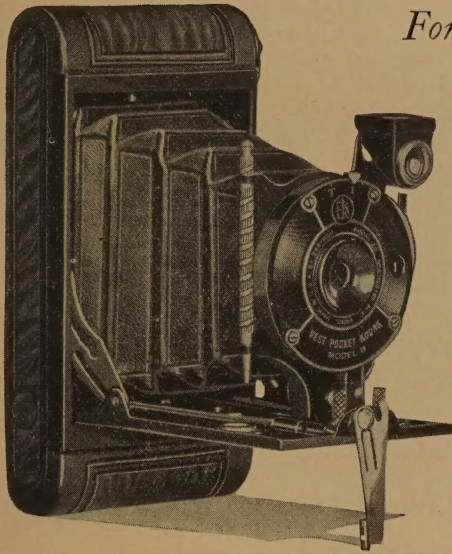
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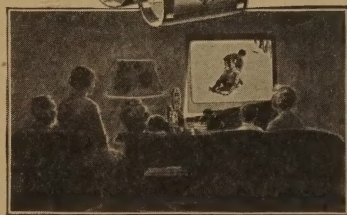
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